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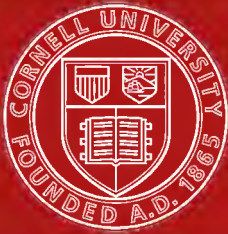
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Archæologia Nova Cæsarea

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BY

sent me *W. J.* Charles Conrad Abbott, M.D.

April 12, 1911

"As quaint old Sir Thomas Browne happily puts it: 'Time which antiquates antiquities and hath an art to make dust of all things, hath yet spared these minor monuments,' and I am heartily glad of it."

1907

TRENTON, N. J.
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1907

PREFACE.

BECAUSE two relics of the one-time occupant of the open plain or the pathless forest are found during the same day, it by no means follows that the two objects were once in the possession of the same individual or that they were fashioned at practically the same time; yet, based upon such an absurd assumption is the view so strenuously insisted upon by the coterie which, after a most superficial glance at the territory in question (the tide-water area of the valley of the Delaware), finds itself limited to denying the discoveries of others who have borne the heat and burden of the day in actual exploration.

It is scarcely complimentary to the average intelligence that those who testify in the role of experts should offer negative evidence as of greater value than that which is positive. Unsuccessful themselves in the finding of artifacts in place, after careful search—not only the asserted search, but the care attending it, problematical—they would feign blot out of existence, by a toss of the head or scratch of the pen, all evidence of man's antiquity. Success has attended these unscrupulous efforts far more generally than should have been the case, or would have been, had the subject been treated honestly, as questions purely geological or historical are supposed to be.

Possibly the most glaring instance of this disingenuous treatment of the subject was based on the absolutely impossible examination of sewer trenches in the streets of Trenton, N. J., during the progress of their excavation. It admirably illustrates my contention. With a gratuitous

diagram to make it the more delusive, the statement was made (*Geol. Jour.*, I, 1893, pp. 15-37) that on the present immediate shore of the river rudely chipped argillite implements were found in abundance, but that there occurred no trace of such objects in the gravel at any significant distance from the river. In other words, that no such objects are ever brought to light when digging cellars, sinking wells, excavating for sewers or water mains, or any other deep removal of masses of earth. This is an absolutely erroneous statement as to the actual conditions, and reprehensibly so, because based on what should have been realized as insufficient knowledge of the region. The author heads the paper above referred to with the question: Are there traces of Glacial Man in the Trenton Gravels? Little wonder that he replies negatively to his own question. Negative evidence was his sole quest.

No speculation as to his own origin by palæolithic man could have been more wild, illusory, and often insanely grotesque than these frantic efforts of modern archæologists to blot from history's page the existence of men whose manhood was yet as an unfolded bud. And the more strange, too, because theoretically man ought to be as old here as the so-called Trenton Gravels. Antiquity is called for when we survey the field as a whole. The study of aboriginal languages demands the lapse of many centuries. Yet, when special evidence of such antiquity is offered, the archæologist becomes suddenly afraid of his own shadow and thinks the holding aloof for additional and yet more strongly confirmatory evidence is sanely valorous. Such attitude permanently holds back the truth.

When, by means of a spade, we explore the ground beneath our feet, after having previously carefully examined its surface, we are confronted by a condition which seems to be one of positive character, and yet it is as illusory, often,

in reality, as it is unquestionable in appearance. So many possibilities are there clustering about the inhumation of objects that it is rash indeed to measure antiquity by the depth at which any artifact may occur. Just as a warm day in January does not mean that June will be ushered in tomorrow, so an implement made and used by an Indian, so recently as when a neighbor of the white man, may occur at a depth that startles the discoverer. May startle, but should not, for the whole range of possibility is to be considered. Certainly no hole was ever dug and re-filled without abundant evidence of the fact. A tree torn by the roots from the ground, as in a notable tornado that leveled an orchard, leaves a deep hole in the ground. Springs that trickle patiently far beneath our feet wear away the soil until a blind cavern is formed, and then occurs a great slumping in the field, and the one-time level ground becomes the sides of a ravine. Intense cold has cracked the earth wide enough and these fissures have remained open long enough for an object as large as the ordinary arrow-point to drop from a few inches beneath the surface to a depth of six or seven feet. A trifling brook, that has rippled over the surface for centuries, may be turned aside and forced to flow in quite another direction, and the old course be so completely covered up that when discovered it has all the appearance of a relic of another geological era. The deep burrowing of many a mammal may be the cause of a recent relic's deep burial, and a cloud-burst, flooding a sandy area, may wash from gravel, where it had been an integral part of the deposit, a rude artifact and leave it upon the new-made surface, exposed to frost and heat for the first time in many centuries. I have witnessed all these things. I have been confounded many times. I have learned to be cautious.

Still, notwithstanding the confusion that confronts the student of the earth's immediate surface, there are yet re-

maining evidences of comparative fixity, and we can, through them, determine the major and widespread changes, distinguishing such from the minor and purely local ones. Were it not so, we might well despair of reaching to any conclusion concerning, approximately, the earliest appearance of man.

It is to be regretted that geology is not, as yet, more of an exact science, and not until it ranks with astronomy and mathematics will it be able to set permanently at rest many of the petty doubts that vex the archæologist. It is true that when treating of Laurentian rock, coal deposits or beds of cretaceous marl, the terms used are dependable, for there is no possibility of a human skull appearing and grinning a contradiction, but when we near the present and dig in, but not beneath the "pleistocene," "quaternary," "glacial" or "recent," or whatever term may be applicable to some particular point, then it is, that if gathered here, an association of geologists are scattered, like startled sheep, if asked the simplest question. An archæologist must be his own interpreter of geological conditions. If not equal to this, he is a mere collector of relics, and whatever the value of his specimens, his opinion is little worth.

Probably no river in the United States presents as important and comprehensive a series of archæological horizons as does the Delaware, from a short distance above its tidal flow to its final merging with the sea. The reason is obvious. The terminal moraine is but about fifty miles away. From it is derived the strata of post-glacial deposits of sand and gravel that form so marked a feature of the valley southward of the extension of the ice-sheet. The immediate surroundings, prior and during glacial activity, now and then at a significant elevation above the flood-line, were heavily forested and inhabited by an extensive and

varied fauna, and not a condition is discoverable inimicable to the highest interests of primitive man; but did he dwell here at that time? Did he know, in this region, the reindeer, the moose, musk-ox and mastodon? Did the walrus gambol in the Delaware's icy waters? Ay, there's the rub!

All that which has been set forth as evidence has been contemptuously set aside as having any archæological significance. If objects found suggestively deep were offered that were unquestionably artifacts, then they were intrusive objects, or, if the conditions forbade intrusion, then the artificiality could not be demonstrated, and the sweeping conclusion of these modernists was, and is, that referring all artificiality to the historic Indian, the purposes of archæological research are accomplished.

Whatever their entire significance may ultimately prove to be, the fact remains that large rudely chipped but distinctly fashioned implements of metamorphosed slate—argillite—which are indistinguishable in pattern from European palæolithic implements, have frequently been found in deposits of gravel, the history of which is unmistakably that of the closing activities of the glacial period, and so far as they were concerned, there was no evidence of such artifacts having become inhumed subsequent to the deposition of the containing bed.

A distinction should ever be drawn between the expression of an opinion and the statement of a fact, but such distinction seems generally to be lost sight of when treating of the archæology of the Delaware valley; by those, at least, who deny the glacial phase of such archæology. Possibly extreme timidity may be the explanation of this unfortunate state of affairs, but far more probable is it that a cultivated strabismus reverses the order, and placing the gravel on the surface and the soil beneath, necessarily makes the older appear the more recent. Be this as it may, there is certainly

more confusion of impression than infusion of fact in the archæological references we find in scientific journals, government reports and the homelier State reports concerning our surface geology.

If we are to accept the dicta of the many who have dilated on the subject, it would appear that whatsoever we must ascribe to man, be it bone or artifact, if found *in* the earth, is to be held as an intrusive object and really belonging *on* the earth.

As it happens, fossils old as and older than the tertiary beds are found upon the surface. Do they belong there?

The geologists can readily tell you why they do not.

Let a theoretically ancient trace of man be found where floods have washed the surface of a field and the geologist's insistence is that, being of human origin, it never was elsewhere than on the present surface; that it could be brought from beneath after an æon of burial is preposterous.

Happily for those interested in the final acquisition of the truth as to man's career in America, the geologist is yet to be born, with vision so penetrative and glance so terrible that doubt will flee at his approach.

The geologist cannot so readily explain the artifact.

His decisive manner, in the one case, is changed to sad uncertainty in the other. His yea was yea, and nay, nay, when discoursing of a shell, but now, confronted by an artifact or human bone, we are treated to endless polysyllabic circumlocution.

Ignoring, then, the literature of the subject, which bears no more important relation to the river valley than the clouds of dust and smoke that continually traverse its length, I returned, some years ago (November 20, 1901), to the rocks and accumulated material that fills the spaces between them and sought again to have them tell their own story of the past. Now, at the conclusion of my labors, I do not

find that it differs materially from that which I suggested was such history, thirty-five years ago.

It may not be out of place to include in these prefatorial remarks passing reference to the fact that, in the interests of several museums, a most competent, careful and tireless explorer has for many years been at work in the same locality that has been for so long the scene of my own labors. His purpose, as set forth by the directors of the several museums, was primarily to demonstrate the untenability of the position I have maintained concerning man's antiquity here, since 1872 (*American Naturalist*, Vol. VI, March, 1872. "The Stone Age in New Jersey."). The results of Mr. Volk have been confirmatory in many ways, and he is fully convinced of the correctness of my views. Unfortunately, there is no likelihood of his voluminous reports being published.

Happily, the river itself rolls on in its quiet, summery way, or rushes its winter's accumulation of ice impetuously toward the sea, unmindful of the strange stories told of it. This is fortunate, for in the telling of its own story we have glimpses of past history brought to light, easy enough to recognize as such, if we have the inclination to do so. The river speaks in no unknown tongue; she offers no hieroglyphics over which we are required to puzzle. All is plain as day to those who choose to seek the truth for themselves and avoid, as they would a pestilence all theorists and the carping critic.

Whether or not a wise caution, whether, on any grounds, worthy or not of defense, it is not my purpose to discuss, but the indisputable fact stands that man is usually—we might, perhaps, say invariably—averse to studying his own, or a species allied to himself, precisely as he would another or all mammals. This, since the dawn of learning, has been the

inclination, albeit without warrant, of every student, to consider himself and all of his genus, if not his species, subspecies or race, as absolutely without the bounds of those accepted methods of investigation that apply to the inferior forms of life, or, in other words, that man is not amenable to Nature, but to himself and the Supernatural. So long as this disposition prevails in anthropological studies, so long will confusion enveil the object studied and the progress of knowledge be retarded.

In the following pages I am concerned only with that people which held in their possession the valley of the Delaware river prior to the seventeenth century. Whether they were here by right of conquest, or peaceful occupation, or direct descendants of a less cultured folk of a preceding geological period, probably cannot be determined without some lingering shadow of a doubt, but this point is not so important as an historian might deem, for whether the sequence of event that I hope to demonstrate is that of generation following generation, or the elimination of one people and succession of another, is of little moment.

The point is, there was a day when never a human foot had pressed the turf of this river valley, and the day dawned when the valley lay before man, with its sparkling waters flowing through miles of up-lifted rock and then idly spreading over sandy plains until lost, at last, in the insatiable sea.

What was the career of this initial irruption of manhood in the valley? It seems at first glance that the improbability of ever knowing is equal to or greater than our desire to possess the facts. But effort, if rightly directed, is a solvent of many difficulties that, idly regarded, appear impregnable. In this instance the right direction, as I regard it, is in studying the historic Indian and his ancestors or predecessors, as the case may be, as a feature of the region's fauna, along with the deer, beaver and opossum and noth-

ing more. In this light his relics are of historic value, in part, and others more of the nature of true fossils. So doing, we encounter fewest difficulties and the facts we gather are intelligible and satisfy all our longings for knowledge of the past. But once we associate the Indian with other peoples and grouping all as something other than a phase of mammalian life, that moment theory becomes rampant and dire confusion follows.

There appears to have always been a certain misconception on the part of geologists who have taken up this question, in that they held that the age of any deposit wherein an artifact may occur is the crowning point of the whole controversy. It is really not a matter of the slightest importance, and the wrangling of experts and savans simply stands for so much energy wasted. The aim has been on my part, and I believe I started the ball to rolling, is to demonstrate a certain sequence of event, as already specified. It is not a matter of moment whether this started in pre-glacial, glacial or post-glacial time. Did it start at all?

Accepting the proposition that it did, the question of probability arises as to whether the appearance of man in America was likely to have been at so late a date as post-glacial. There would be no physical barrier to man entering the continent during glacial times, if its shores were reached south of the area affected by the ice, and certainly it is within the bounds of possibility. We know as yet too little of South and Central America and the West Indies to assert that nothing can be expected of that region and that the northern region, Behring's strait and adjacent territory, was the sole scene of the initial immigration.

Surveying the entire outlook and seeing, as I claim I do see, the three horizons of palæolithic, pre-Indian and Indian, here in New Jersey, I incline to the view of pre-glacial

occupancy of the country, but if this is demonstrated to have been impossible, it by no means affects the question as to that sequence of event for which I have contended.

The material upon which the following report is based consists of the author's personally-collected specimens, now in museum of Princeton University, and grateful acknowledgment is here made of the pecuniary assistance, so generously provided by Messrs. M. Taylor Pyne and Junius S. Morgan, of Princeton, without which the collections could not have been made and this report thereon published.

C. C. A.

THREE BEECHES, Trenton, N. J., Feb. 18, 1907.

ARCHÆOLOGIA

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IMPLEMENTS AND ARTIFACTS.

A SERIOUS difficulty confronts us when we attempt to place a proper value on the term "primitive," as applied to mankind at the outset of his career, or that period when the influence of pithecoidal propensities was almost lost. Certainly this far-off day in human history ante-dates man's appearance on the North American continent, judged by the traces of his presence as yet discovered. Still, the advance toward what is now recognized as humanity was not strongly marked. Mentality had not the animal under absolute control. The animal was not yet convinced that intellectuality was altogether and under all circumstances wholly desirable. There was constant struggle, while ape-like chatterings were giving way to mumblings and cries that were scarcely more suggestive and intelligible.

A marked feature of advance was not so much the use of natural objects for defense and other purposes, for monkeys know the value of a weapon, as when a cocoanut is dropped in a pre-determined direction, but in the selection of objects peculiarly suited to their several purposes. When ancient man first faced a gravel bed, with a gleam of intelligence in his countenance, and noted the infinite variety of shapes and size of the pebbles, that moment was the daybreak of his intellect, and when his hand grasped a selected stone and he used it, rather than his fist, to effect a purpose, that day implements were brought into existence; a new idea, a new world, a new train of thought was started on a career that is yet pushing onward, and will continue its irresistible journey till the end of time.

The implement, therefore, ante-dates the artifact, meaning by the former any natural object that man has put to use to further his endeavor. To-day, if I pick up a pebble and with it crack a nut, that pebble, for the time being, becomes an implement. Obviously, such use may leave no trace behind it, and if stones were used but once and tossed aside and another chosen when next a need occurred, it would be in vain to seek for evidence of man's presence, but it is quite within the range of probability that stones peculiarly well adapted to certain uses were retained, and so the idea of property dawned upon the primitive mind, and such chosen stones—now implements—would show the effect of wear and tear in time, and I doubt not but that specimens often, which have been gathered from gravel deposits, having attracted the attention of the archæologist when in search of "conclusive" evidence, are discarded as indefinite, when really they are as much a proof of man's existence as the desired palæolithic artifact. I think this, because on many a village site, associated with the most specialized forms of stone implements, we find battered and slightly-chipped pebbles that are not, as there found, objects of doubtful significance. Replace them by similar objects from the gravel, as can easily be done, and not an archæologist lives who can tell the one from the other.

The difficulty is enormous of determining between such abrasions, fractures and rubbing of surfaces as natural forces bring about and those resulting from the use of a stone by man as an implement. It is so often impossible that the attempt had better not be made, for though the archæologist may be able to satisfy himself, he will fail to convince anyone else, for, as experience has shown, it needs but the negative nod of ignorance in office to nullify the results of honest toil in the field. Nevertheless, such thankless undertaking should not be always shunned. It must

not be forgotten that man existed undeterminable thousands of years ago, and when his manhood dawned, and for long afterwards, he was leaving scarcely more traces of his elemental culture behind him than do the anthropoid apes of to-day. Surely, a battered pebble is scant evidence of man's presence so long ago as when the melting up-river glacier was pouring its mighty flood down the valley of the Delaware, and while there are pebbles and pebbles and marks of violence and marks of violence, is there or not the remotest chance of unquestionably distinguishing between those that are referrible to nature and those referrible to man?

I have in mind a high, dry, sandy field, to which Nature never carried a pebble. Nothing but sand, and this resting, twenty feet below, on clay. Yet, stones are not uncommon, from pebbles not larger than a pigeon's egg to boulders of considerable weight. There is no contradiction here. Every stone was brought to where it now lies by the Indians. Not all show signs of use, but by far the greater number tell their own stories of playing the role of implement. They are worn away in places by reason of continued and violent contact with other equally hard or more resisting objects, "pecking," as it is usually termed; they are rubbed down until their polished surfaces fairly glisten; some have been exposed to fire and are cracked and discolored by the heat; some, doubtless, were gathered because of their color, and were treasured as ornaments, or, when nearly globular and small, used in playing games. Whatever the history of these pebbles, altered and unaltered, as a whole, here they are, and have in common the archæological significance of having been brought to a village site by the villagers.

In two respects they are of great interest in their bearing on the question of the traces of man in the "Trenton Gravel." They show how all-important a part pebbles played in man's career at its outset, and, again, the slightly battered

specimens of the village site are duplicated by pebbles, similarly abraded, occurring in the gravel. This brings us, in turn, to the question of the possibility of distinguishing between naturally and artificially battered pebbles. He comes nearest the truth probably who, holding in check the too often reckless enthusiasm of the archæologist, avoids also the cold-blooded caution of the geologist.

The mark left by the sudden contact of one stone with another may or may not be very conspicuous, but it invariably (?) has the character of a single occurrence of such contact. If, again, these same pebbles should come in contact and another trace of like violence be left, the chances are certainly infinitesimally small that such marks should be at or practically at the same point. Pebbles as a mass, after having been smoothed to uniformity of surface by water-wearing, are, when violently agitated, which seldom occurs, irregularly pitted; but, on examining the selected pebbles from the village site, the battered specimens have abraded surfaces only at certain points, and these are just those that would be exposed to violent contact, if used as hammers, as in pecking away the surfaces of other stones, as when pebbles were shaped to axes, celts and pestles, or in the humbler use of cracking nuts or crushing seeds in a shallow mortar. We never doubt the artificial origin of such pecked surfaces. Now, it happens that we occasionally find pebbles in the gravel with a trace of this localized pecked-away or battered surface, and such specimens are worthy of a good deal of serious consideration. If we found them on the surface of a field, their claim to archæological significance would never be disputed, but, occurring in the gravel at some depth, there is a possibility of a "natural" origin of the abraded surface, and so all such objects are peremptorily ruled out of court. This may be a safe procedure, so far as the judges are concerned, but so doing is far away,

possibly, from the actualities involved. We can come to no positive conclusion, it may be, but of this I am sure that the probability is largely in favor of many a battered pebble that is now, and for centuries has been, a constituent part of the gravel deposit, having become battered because used as an implement.

What has always been urged as an insuperable difficulty to the presence of man in the Delaware valley at the time of the last general re-assorting and re-depositing of the irregular gravel beds that now constitute so marked a feature of the valley at the head of tide-water is that humanity, in such primitive condition as to be dependent on pebbles for implements, could not have reached this distant point of the Atlantic seaboard from the center of distribution of mankind. As to this, we do not know where such center was, or centers were, if more than one. Certainly, this is an important matter, not yet finally determined. The Asiatic origin of American man is nothing more than an assumption, and I hold that as time does not enter into the question at all, there is no greater difficulty in a migration of such primitive man or his gradually spreading over a vast territory than in the migration of any other mammal, and the difficulty decreases when we look upon it as a very gradual dispersion and not a predetermined effort to go up and possess the land in any one direction. The most formidable objection that I can see in the existence of strictly preglacial man is the, as yet, complete absence of any trace of him. We prefer facts to theory, just as we have them in abundance in the valley of the Delaware, where the popular theory of his non-existence finds scanty basis. The battered pebbles and an occasional flat one from which a few very suggestive flakes have been detached, hold the attention of the collector, who is ever hoping for more tangible evidence of man, and, as I have felt for many years, deserve to be considered more seriously than they have been.

THE PALÆOLITHIC ARTIFACTS.

And what now of that associated form, the palæolithic artifact? Indeed, it may well be asked, what is it? Is there a type of implement than can readily be recognized as something separate and apart from an unfinished object of a later pattern?

When we speak of a palæolithic artifact as a pointed object, from five to eight inches in length and the product of man's handiwork, we have gone over the entire range of certainty, and all subsequent comment must necessarily be suggestive and forever subject to change of view. As no European ever saw a native American use such a tool or weapon, as the case may be, it is obviously but conjectural how he did use it; but that there was one or more definite purposes in the mind of its fabricator is certain. That it was not a "simple" implement, as suggested by Brinton, is probable, as to hold it in the hand would have been awkward, and blows with it not particularly effective, except in hand-to-hand encounter, which probably was not the chief occupation or amusement of primeval man. If, in those days, man was quick to pick a quarrel, such an object as a palæolithic implement would be far more effective as a weapon, if hafted, and so it is not a rash conclusion to reach that such man had a wit equal to the invention of a handle to his favorite weapon. Thus armed with a "compound" weapon, as Brinton calls them, he who wielded it was not ill equipped to meet the attack of any foe. Implements of obsidian, as rude, if not more rudely fabricated, were recently and may yet be in use among the South Sea Islanders. The undisputable palæolithic artifact has, since the day of its use as the armature of ancient man, been largely reproduced in the fashioning of more specialized implements, and this has led

to much confusion in the minds of lay readers, through the amusing whims of strenuous modernists, who have examined—not explored—the territory in question with notable lack of critical acumen and apparently with no serious intent. The result of such conclusions as were reached and given to the public—with which admissions in conversation do not tally—is that all unspecialized artifacts are “Indian rejects.” The truth is, the resemblance, as stated, is purely accidental, and the differences ever existing are readily detected by those whose studies have not confined them too closely to the museums. It must, too, never be forgotten that the circumstance of occurrence, the condition of object and whether associated or dissociated, so far as unquestioned recent artifacts are concerned, must be ever kept in view. Apparently, this care has not been exercised by those who desire that evidence of antiquity shall not materialize. The distinction between historiography and archæology has not been suspected. The former has been held to be equal to all the demands of the conditions obtaining, and the latter, while perfunctorily referred to, has not been recognized as what it is, but as something that really had no case in court.

Considered collectively, the palæolithic artifacts are made of argillite, a metamorphosed slate that is readily shaped under moderately skillful manipulation, the fracture under pressure or well-directed blows being conchoidal, and so all the excellency of flint, for such purposes, is present. While this material, argillite, is *in situ*, not far above the limit of tide water—about twenty miles—the earliest inhabitants of the Delaware Valley were not necessitated to seek any outcrop of the mineral, inasmuch as large boulders of the same were everywhere to be found, where the glacial floods had spread out a deposit of gravel. These detached masses were

utilized and the indications are, were used long before their origin was known to the primitive chipper. It is altogether safe to assume that the region of occurrence in place of this argillite was inaccessible to the men who first chipped the boulders that were scattered over the habitable areas.

An Indian "reject" made five hundred years ago and a palæolithic artifact made probably five thousand years ago, if the material is identical, would, it is natural to suppose, present different degrees of weathering or surface decomposition in some measure consonant with their relative age, but this is not necessarily the case. The older object, if so buried as to be protected from corrosive agencies, may retain a freshness of surface that has long been lost by the "reject" lying near the surface and alternately exposed and buried and subjected to frost, heat and erosion by wind-driven sands. This is the history of many an Indian relic, and often we find them so far altered that the definition of the chipping and minor features of design are obliterated; but a true palæolithic artifact from gravel undisturbed for centuries is practically the same as when fabricated, and only the sharp lines indicative of detached flakes have been worn away. They often have a freshness of surface that is disturbing to the advocate of antiquity, and the collector is puzzled to fit his ideas to the object that seemingly is of very recent origin. This must ever be borne in mind, and then confusion is not likely to arise. It is in the museum or the library that trouble comes. When in the field—his only proper place—the archæologist realizes, as he can nowhere else, what changes in the region have taken place, and the distribution of newer and older conditions are distinctly defined; in short, the procession of the ages passes by. Again, such ancient artifacts are found singly. Among a million pebbles, a deeply buried stratum of sand, beneath a narrow band of clay, anywhere where deposits through icy

floods and floating ice occur, deep or near the present surface of the field, we may look with some confidence, but necessarily the chances are against their discovery. These chance relics of forgotten time, dropped by accident and at once buried by the shifting sands, have been left from then till now, as a veritable pebble among pebbles, hidden effectively from any destroying agency and remain recognizable but mute witnesses to the men who roamed this river valley when every feature of it was wholly different from what now obtains.

The true artifact is a finished implement. The same cannot be said of the Indian "reject." The palæolith, if desired, could be readily reduced to smaller size or even to a different design, but the true reject shows why it is such, and that further expenditure of effort would be in vain. The "fault" in the mass of material selected is plain or its generally intractable character apparent, and so the reason for rejection evident, but this cannot be said of the undoubted palæolithic artifact. It is as much a finished implement as an arrow-point or a grooved stone axe. There is yet another point to be considered. In the immediate valley of the river, these ancient implements are either buried and exposed by digging or are found in the talus where an escarpment is gradually crumbling away; but they are not confined to such areas, but are found buried or unburied, as the case may be, miles away from the river's shore or such adjacent land as was affected by its activities as the outlet of a glaciated area. Palæolithic man was not a semi-amphibious creature and dependent on water as much as land to lead the life he did. He may have been much as is the Greenland Eskimo of to-day, but not necessarily. His was no insignificant territory, even here in New Jersey, for the coast line was then different, and much land, now lost to us, was familiar to him. This, I unhesitatingly assert,

because what I believe to be true palæolithic artifacts have been found in the southernmost counties of the State. I have found them in both Atlantic and Cape May counties, and throughout the whole intervening area, from the present coast line to the immediate valley of the Delaware, they occur singly, and usually where the ordinary Indian relics do not occur. Often so worn by exposure to the shifting sands, to frost and rain, they are not readily recognized, when seen apart, but when a series are brought together, the lines of original fracturing can be traced by aid of those that have been protected from weathering. There is a limit to this, however, and many a perfectly smooth pebble of argillite, with no definition of chipping remaining, may have been a sharply defined artifact in its day, just as we know that many a now shapeless splinter of the mineral was an arrow-point, because of some slight tell-tale feature remaining. This view is strengthened by the fact that water-worn artifacts occur in the bed of the river, so smooth and even polished that the thought of their having been once chipped would not occur were the practiced archæologist not able to trace the lines that once were prominent, notwithstanding the grinding and polishing to which they have been subjected. Placing one such beside another that has escaped erosion and the same history, so far as artificiality is concerned, can be seen to apply to both, but seen alone, the eroded or smoothed one might be readily passed unrecognized.

What to many has seemed a valid objection to the view of a one-time occupation of the valley of the Delaware by palæolithic man, is that raised by the results of an examination—in no case exhaustive—of the conditions obtaining in the immediate vicinity of the occurrence of argillite *in situ*. Here, amid a mass of flakes, splinters and chippings in-

numerable, are found unfinished implements and rejects that bear a marked resemblance to the claimed ancient finished artifacts found miles distant. Why, it is triumphantly asked by the explorer of the non-tidal reaches of the valley, are not the scattered objects—the so-called “palæolithic” implement—simply those unfinished forms which the Indian elected to retain and carried away with him, or, if found in the immediate valley, might they not have been carried down by the freshets since Indian times? These questions demand that they be very carefully answered. They are very pertinent and apparently present serious objections to my view. Had I not intimate knowledge of the conditions both in the non-tidal and tidal areas, I should be perplexed, but as it is am not disturbed, as the two points, the tidal and non-tidal, have really nothing in common, so far as the archæology of the entire river valley is concerned.

As I have already pointed out, the objects found in the tidal areas were made—if made in pre-Indian time, as I claim—of argillite boulders found on the spot, and this is the more probable because the ice at present, and equally true of it in Indian time, does not transport masses of stone as large as an average palæolithic implement. A careful examination of the ice as it has floated from the up-river regions and accumulated in the tide-water shallows, shows that nothing of greater bulk—in stone—than sand and robin’s-egg pebbles are transported, and the number of the latter is very inconsiderable. If not floated, or, more properly speaking, carried by the ice, may they not have been rolled along the bed of the river? Doubtful, to say the least, and if so, their journey, under such circumstances, of some twenty miles would leave such indelible marks that the fact of their transportation after this fashion would be obvious to all. Chipped implements, as already pointed out, which have been subjected to much water action, present unmis-

takable evidence of such exposure, and are readily recognized as such when compared with upland specimens. These water-worn artifacts are not, as I claim, intrusive objects, but integral parts of the gravel deposit which now forms part of the present river's bed.

It must be remembered that the action of the ice, when moving, as when there occurs a "break-up" in the spring, is different in the up-river and tidal-river localities. In the former the ice is largely grounded, and, when moved, necessarily pushes the gravel before it, so that a clean, sandy beach of an island that one summer may be free from large pebbles, may be covered with them the following season, but when these same cakes of ice reach the deeper tide-water they float and so cannot aid in the transportation of anything not encased in them. After many a year's search, I have found no ice-encased pebbles that were one-hundredth the bulk of an ordinary argillite artifact. Buoyant articles, as wood, eggs and shells, have been frequently found, but never a stone that would weigh a pound or two. This up-river ice, reaching the gravel bluff at Trenton, rests against it and is often piled to more than half its height. The bluff itself is not materially affected by this ice, and when the force of the accumulated waters dammed by the ice causes the gorge to give away the break never occurs along shore, but near the middle of the stream, and long after the river is clear and navigation is resumed the shore ice remains where originally lodged, and slowly melts away. It is the water-freshet, due to great rainfall, that undermines the bluff at times and causes it to crumble. This has been going on for so long a time, and so rapidly since the deforesting of the country, that the river is now far wider and shallower than when the Indian dwelt along its banks. Not a colonist of the seventeenth century, could he return, would recognize the Delaware of to-day as the river that was so attractive when he saw it first.

Other explanation than transportation from the rock *in situ* must be sought for the presence of those implements found mingled with the gravel and now exposed to view. Mr. W. H. Holmes has suggested that an Indian, walking along the river shore, chose a pebble and attempted to fashion a blade. The mineral failed to lend itself satisfactorily to the implement-maker and he tossed it aside. Here, centuries later, we find this "reject," and presumptuous, is it, indeed, to look upon it as anything else. Why could not an Indian walk upon exposed gravel and pick up a pebble as well as we can to-day?

There are two considerations to which we must give heed when this question is asked. We are, in the first place, tacitly informed that the Indian was given to chipping stone in this haphazard way to supply a sudden need upon the spot, all of which is a gratuitous assumption, for though argillite boulders and pebbles were available, there was, doubtless, selection of material exercised, if we may judge from the fact that argillite artifacts, as we find them, show no evidence of intractability, and could have been reduced in size; hence, in no sense can the term "reject" be applied to them. The impracticability of reducing a piece of argillite to desired shape would be so early recognized that real failures would have more the appearance of frost-fractured stone and be little suggestive of human interference. Then, again, if the object as found has been lying undisturbed on the river shore for centuries—two centuries at least—why is it that the chips are not there also? These are never found under such circumstances. In fact, they are very rarely found at all in the gravel where the implement itself occurs, and yet in numbers they exceed the "reject" or finished object at least as ten to one. Furthermore, we are asked to believe that the river shore where we find rude implements is the same to-day as when the Indian wandered

along it centuries ago. Everywhere the river shows clearly how the never-resting tidal flow wears away the shore, carrying sand and fine gravels from one point and spreading it elsewhere to form a sand bar, it may be, and turning the channel from one side of the stream to the other, and so exposing long reaches of the shore to wasting, that for many a year had been fixed and apparently secure. Often the mud is entirely removed from the underlying gravel, and abundant traces of Indian occupation are brought to light, and, less frequently, so strong a current attacks a given point that even the gravel is moved and deep holes are formed, to be filled in time with the wasting shore from a point perhaps a mile away. This is the story of the river of to-day, and so it has been for centuries; and yet we are asked to believe that we can fill the moccasin prints of the Indian by walking now along the water's edge. I submit that it is asking a great deal too much.

It has been suggested that rudely chipped implements, when found on the gravelly shore of the river, have fallen out from the bank and rolled down from where they had long been lying. This is not at all improbable; but how does this modernize the object, when the gravel extends quite to the surface? The pebbles and boulders at the top of the bank are clearly as much a part of the deposit as are those at its base, and while the surface may be—is, in fact—less ancient than the deeper gravels, still they can not be dissociated; and it is a significant fact that we find, on the gravel at the foot of the bluff or other exposure, only the rude argillite objects at the water's edge or on the flat laid bare at low tide, and not a general assortment of the Indian's handiwork, including pottery; and we must not overlook the fact that the "gravel-bed" implements bear evidence of all the conditions to which the gravel itself has been subjected—this one stained by manganese, that incrustated with limo-

nite; this fresh as the day it was chipped, because lost in sand and water and not subsequently exposed to the atmosphere; that buried and unearthed, rolled, scratched and water-worn until much of its artificiality has disappeared. The history of almost every specimen is written upon it, and not one tells such a story as has been told about it by the originator and advocate of the "Indian-reject" theory.

As I have already mentioned, it has been stated in the most positive manner, which only positive evidence could warrant, that artifacts have not been found *in situ* in gravel deposits at a distance from the river, and such, *if there were such*, as appeared to be in the gravel, were recent intrusions. This statement, in its several parts and its entirety, is absolutely incorrect, and no excuse can be offered for its publication. It is to be explained, however, because avowedly predetermined. Wherever the glacial gravel of the Delaware tide-water region is found, there palæolithic implements occur, as they also do on and in the surface of areas beyond the gravel boundary. We accept, notwithstanding the unscientific source of the suggestion, the statement that post-glacial floods inhumed all traces of man found beneath the superficial soils, and find that, if these traces are considered in that light, some mysterious power was behind the senseless flood, and always buried argillite palæolithic implements far down in the gravel, and then selected argillite artifacts of more specialized forms for the overlying sands and reserved the pottery and jasper arrow-points for the vegetation-sustaining soil. This, as stated, is absurd, but such is the order of occurrence of the traces of early man in the upland fields.

Much stress was laid by this same author upon the negative evidence of failure to discover artifacts when extensive excavations for sewers were made in the streets of Trenton. It is not at all strange that no palæolithic implements were

forthcoming. The digging in question was always so narrow, so deep and generally so dripping with moisture that it was impossible to examine the sides of the excavations, and so treacherous withal, this gravel, that as the dirt was removed the trench was planked to prevent caving. No human being ever could or ever did make any critical examination of these sewer trenches, and all that could be done was to examine the gravel as thrown out, shovelful at a time. This I did for many days, and never was aware that there was another Richmond in the field. As we all know, when a hole is dug, the dirt from the bottom is on the top of the heap thrown out. Now, it does happen that I found at the very crest of a ridge of gravel thus tossed out from the trenches, two artifacts, which were forwarded to the Peabody Museum, Cambridge, Mass. And what if nothing were found? Negative evidence at most. But consider the territory explored! We might as well think we know a field by following its fences. Mr. Holmes hoped to find a grain of dust on a thread of gossamer, or, what is far more probable, was desperately afraid that he might do so. This really is all that need be said on this phase of the subject.

It would be strange, indeed, if the Trenton gravel, with traces of man therein, should contain no other evidence of animal life. Such a condition would greatly complicate the question, and we might well look askance at asserted evidence of a human being living under such. It must be made apparent how he could have lived, and this is done by the occurrence in the same deposits of a wide range of mammalian life. The report of the State Geologist, for 1878, informs us: "There has been found in the terrace of modified drift at Trenton the tusk of a mastodon * * * the inference seems plain that the climate at that time (*i. e.*, during the deposition of the Trenton gravel) admitted of

the growth of animals like the elephant in size and habits." To this I would add an extract from a paper by the late Samuel Lockwood, on mastodon remains from New Jersey. He remarks, in the conclusion of his most interesting account :

"Two facts have much impressed me—the great geological antiquity of the mastodons as a race, and the very recent existence of the individual we are discussing. The race began in Miocene time; this individual lived in the quaternary age, and well up into the soil-making period. There is little if any differentiation of the molars. The cusps, or teats, on the crown are high and prominent, although I think it must have been one of the very last of its tribe. Though the race came before those great castors now extinct, this individual was contemporary with the existing beaver, and doubtless with the aboriginal man.

"It is singular that in the present controversy respecting the subsidence of a part of the eastern coast-line of the United States, I have never seen the testimony of the mastodon put in evidence. As already said, this animal has run through a long stretch of geologic time. I saw a tusk taken from the Trenton gravels of New Jersey which belong to the ice age, or glacial epoch. I have part of a tusk taken from the shore in Monmouth county, New Jersey, after a storm. This storm from the sea had washed away the drift which covered an ancient swamp, in which this relic, with other bones, had been entombed. But that swamp had been far inland, sufficient for a depression to exist far enough away from the action of the sea to enable it to support a non-marine, sub-aquatic vegetation. The subsidence had allowed the sea to come up and uncover that creature's grave. Last summer, at Long Branch, I saw a fine mastodon's tooth which was taken up by fishermen out at sea. I have also some fragments of a mastodon's tooth, besides

an almost entire one of remarkable size. * * * *

It was given me as coming from Long Branch, where it was obtained so long ago that its history was forgotten. I detected upon it the microscopic skeletons of marine *bryozoa*, the same species that I have often found on the shells of our modern oysters. This tiny animal can only attach itself to a clean anchorage in the clear sea-water. Hence this tooth was evidently got from the sea; and, more, its old grave of mud or peat was long ago invaded by the sea and churned up, so as to float it away, leaving the tooth on the clean, sandy ocean-floor.

"So it is plain that the mastodon came into what is now New Jersey ere the ice-sheet began. It receded south before it. It followed the thawing northward, and so again possessed the land. It occupied this part of the country when its shore-line was miles farther out to sea than it is to-day. Here it was confronted by the human savage, in whom it found more than its match; for, before this autochthonic Nimrod, Behemoth melted away."

The list of mammals known to have lived here at this time is not a long one, but it is suggestive. Leidy has reported the walrus from New Jersey, and Cope states: "The Greenland reindeer was a resident of New Jersey when the walrus was on its shores and when the climate resembled that of its present home." True, except that all the indications favor the view that the climate was not so arctic as at present in the range of the reindeer. The moose, according to Allen, probably "in glacial times inhabited the eastern coast of the United States southward to Virginia." Mr. Volk has found one bone, referred by competent authority to the musk-ox. The seal still wanders up the river, and doubtless, centuries ago was a common feature of the river's icy waters. Surely the land was ripe for human occupation, and it would be far more strange if it

could be proved that it was not so occupied, than is the offered demonstration that palæolithic man shared the region with these creatures. The conditions were more favorable here, then, than now confront the boreal race of the continent, the Eskimo.

The relation of this arctic race to the historic Indian has been much discussed, and it was to be hoped that the exhaustive explorations of the gravels about Trenton, by Mr. Volk, would bring to light crania that would settle the question for all time, but such skulls as have been found under conditions indicative of vast antiquity (but three in number, so far as I am aware) do not bear out the Eskimo theory. Dr. Hrdlicka states them—two of them—to be southern rather than northern in type, the other not separable from the Indian.

Notwithstanding this discouraging result, the question remains a prominent one, and the literature of the subject is too extensive to be ignored. I will return to this discussion on a subsequent page.

THE PRE-INDIAN IMPLEMENTS.

Whether, with the subject as presented, the reader looks favorably or not upon the solution of the riddle of the rude implements to which I have applied the term "palæolithic," the archæologist stands on a firmer footing and need be less apologetic when treating of that other phase of the subject, that of the practically exclusive use of argillite and the evidence of this use ante-dating that of quartz, jasper and the allied silicious materials.

To the assumed—I think, demonstrated—palæolithic man, this mineral was as iron to us, his main dependence. Not that he knew nothing of the availability of other and

even better adapted material, but no other material more fully met the requirements of his limited needs. Time, however, wrought its changes then, as it does now. There was slowly brought about such alterations of climate as affected him vitally. Of greatest moment was the gradual cessation of strictly glacial activity and the river began to wear something the appearance that it now has when at a freshet stage. Change the environment and the habit changes. This is a fixed law of Nature. Man's habits changed. The "palæolithic" implement, tool or weapon, as the case might be, came to be looked upon as we look now upon the pre-historic bronzes of our remote predecessors. The new conditions had made new men of the descendants of their ancestors of the Ice Age. They aspired to better armature and, can we doubt, the change of the fauna and increasing wariness of game made such change in hunting implements imperative. It is still possible to drive a nail with a stone, but we prefer a hammer. With this specialization of implements came the necessity for more careful inspection of the unworked material and the source of the original supply as boulders and pebbles was found up the river valley, some twenty miles above tide water.¹ Naturally it became a place of importance, and how important is evident from the traces still remaining of the implement-making industry. It clearly foreshadowed the steel trust of today.

That the entire output of argillite objects, large and small, and of every pattern, should be referred to so important a manufacturing centre as about Point Pleasant, is not more strange, perhaps, than that we now think of Pittsburgh or Bethlehem when we see some vast construction of iron; but

¹ H. C. Mercer : various papers by, in Proc. A. A. A. S., 1892, 1893; "Science," June, 1893; Amer. Nat., 1893; Publications, Univ. Pa. VI., 1897.

not all manufactured metal comes from these points. Early in our career as a nation, down in the "Pines" of southern New Jersey, iron was gotten from bog ore there and made available with charcoal as fuel. So, precisely, long before the American stone age man discovered Point Pleasant and the argillite out-crop, he had a supply of this material, equal to his needs, in the boulders scattered not only in the immediate valley of the river but over the surface of the land that was habitable, when the river itself was yet choked with ice.

The locality has been frequently visited and much written of, but this literature has largely the defect of being prepared for a purpose, that of modernizing the arrival of man in the region. It is clearly evident that no archæological survey of a limited area is sufficient to warrant a comprehensive conclusion. This fact has not been recognized, and while the various papers treating of the region are marked by accurate description, the inferences drawn that because palæolithic-like objects—mostly "rejects"—are found here, the isolated and older weather-worn and water-worn objects of superficially like appearance of the tide-water region, are identical in age and origin—all this is quite unwarranted. Under a walnut tree, not long ago, I found a slab of stone and battered pebbles that had been used in ridding a great heap of nuts of their hulls. The abraded surfaces were precisely such as are seen on every "hammer" found on an Indian village site. Ergo, the battered pebbles are nothing earlier, at most, than colonial occupation. This fairly represents the "logic" of the conclusions reached by some who have given the argillite out-crop close attention. Close, surely, considering the details given, but not close enough. The locality is clearly one with the more specialized argillite man, traces of whom are found unequivocally associated with the gravel-capping sands that overspread the Trenton gravel throughout much of its extent.

At the argillite out-crop we have, as I have seen demonstrated by excavation on two occasions, evidence of industry when argillite was solely in demand, and here there was always a commingling of the rudest with the most elaborate form of implement. They could not be dissociated in any way, and clearly, under such circumstances, any object that bore resemblance to a palæolith was necessarily a rejected blocking out of something of more definite character. This is significant and more so that chips of all sizes outnumber finished objects, hundreds to one. Now, this is not applicable to argillite as distributed throughout the river valley's tide-water extent. The conditions there, differ absolutely.

Again, and of equal importance is the fact that nearer the present surface of the same locality, where the greatest variation of forms of small implements, arrow-heads, drills, scrapers and knives occur, pottery is also present and points of jasper and quartz. The introduction of these silicious materials for weapons and implements did not cause the abandonment of argillite. Steel forks and pewter spoons are still to be bought at hardware shops. The man here in the Delaware valley, undertermined centuries ago simply passed from the argillite to the quartz age, but no more discarded the former mineral for the latter than do we, in our iron age, give up the use of copper. The argillite out-crop in the river valley nearest to the tide-water region is post-palæolithic, but at its incipency, pre-Indian, if by the term "Indian" we mean the advanced savage of the day of the continent's discovery by the Norsemen or later, by Columbus.

Returning to a consideration of the territory, where tidal-action occurs, the omnipresent argillite arrow-point is suggestive in other lines. We are not, here, concerned so much with the origin of the mineral as with the object itself. The extreme degrees of decomposition, that we now find,

does not occur at the mineral's outcrop. Supposing it to have been abandoned about three centuries ago—certainly, not later—that lapse of time has not sufficed to weather the specimens left there to any such degree as we find on the fields extending across the State from Trenton to Cape May. Many an isolated arrow-point, as now found, preserves its shape but has small hold upon its original value as a weapon. Not only its surface but almost to its heart, it is reduced to the consistency of chalk. A core alone remains by which, in many cases, we can trace it back to the argillite in place, a hundred miles or more, away. Not all argillite is the same in consistency. Its chemical make-up varies a good deal. The elements attack it in different ways, and while the greater number are uniformly decomposed, others are pitted or honey-combed, the carbonic acid in rain water having eaten out every trace of lime; and still others are not only weathered to the point of non-recognition as artifacts except by the aid of a graded series, but are encrusted with limonite, itself a condition that indicates a greater age for the argillite points than those made of jasper or quartz, as these have as yet escaped such incrustation. I have examined thousands and tens of thousands of arrow-points of all materials ever used and have never, here, in New Jersey, found any with limonitic incrustation, except those of argillite. This does not arise from any peculiarity of the mineral inviting such incrustation, for pebbles of every kind known to the Trenton gravels show marks of it, but never, I hold, a quartz or jasper arrow-point but is as clean and sharp to-day as when it was chipped.

Fortunately for the interests of archæological research, there yet remain areas that have been undisturbed since the days of the Indian. Forests have flourished and decayed and grown again; the tide has ebbed and flowed through

many a marsh; upland swamps escaped the desolating hand of Improvement; not every acre converted into a smiling field, but wearing, rather, a sardonic grin. Nature can tell her own story when given half a chance, and man figures in it, here, in the sands of South Jersey. He is one of the many illustrations that illumine her pages; not in the same chapter with her fossil shells and bones, but nearer to some of the latter than geologists have been willing to admit.

Rambling, in search of relics, over the country and looking for them, not on ploughed fields or wasting sand banks, but where the chance of success is most remote, it sometimes happens that an arrow-point is found, or some larger chipped implement of unknown use. The question of its origin instantly arises, but in such a case, we can only refer it to chance and so know nothing more than before we picked it up. This is true of one or a few such discoveries, but, retaining the objects we find, after years of such searching, we find that a light is thrown over a series that failed to be detected when it fell on one alone.

These isolated objects are scattered fairly evenly and often occur where, under present conditions, man could not have lived, and it is safe to assert, so far as the tide-water region of New Jersey is concerned, that the scattered relics are fully ninety-five per cent. of argillite. Surely, there is significance in this.

Again, taking all the relics that have been gathered from the same area, I believe it will be found that those of argillite so largely outnumber those of other material that the proportion is suggestive of the jasper and quartz figuring as the proverbial exception to the rule. The latter are the gatherings from village sites and burials; the former are found, as are the pebbles, as if broadcasted by Nature and not through man's agency. This means that argillite man preceded the chipper of flint, and this in turn does not mean that

former was simply the grandfather of the latter. There is no such scattering of the relics of the historic Indian over the entire surface of the southern counties of the State as there is of these rude argillite flakes and knives, and many, if not most, now so weather-worn that many have passed the stage of absolute certainty of recognition.

Based on an estimate of thousands of relics of the historic Indian in every county of the State, which is quite within bounds, what of the tens of thousands of the older implements of argillite? Is it not inconsistent with the assumption, seriously set forth, that an estimate can be made in years of when man first pressed foot on the soil of New Jersey?

If then, the evidence points to what I have suggested as a Pre-Indian people, who were they and what their relation to the historic Indian? If we had as firm ground to stand on as is our confidence when given to taking a stand on the question, light might, ere this, have been thrown on the subject. The problem of the most ancient man in America is complex, and probably the conclusions finally reached on the Pacific coast, in mid-continental regions and along our Atlantic seaboard, will not be quite the same, beyond the fact that the invasion of the continent by man is a subject within the scope of geological research.

Granting the one-time existence of palæolithic man, we can only wonder from whence he came, so firmly convinced are geologists that the parental stock was no strictly American mammal. However, given time enough, anything within the bounds of reason can occur, and there is immensely more time in the past than has elapsed since the first of the Lenni Lenâpè saw the Delaware and it is a most reasonable conclusion that wild beasts had not this great section of the earth's land surface all to themselves. Accepting as the simplest and probably safest conclusion that

the pre-Indian, argillite man of the glacial sands was a descendant of palæolithic man, to what known race can we liken him? We most naturally think of the existing Eskimo, and surely it is a tempting theory to see in them a survival of that ancient race of the Delaware valley. A great deal has been written in years past, favoring this view, and it is of such weight that it should not be forgotten when the results of later archæologists are presented.

A forcible objection that has been urged against the assumption, as it was held to be, of a pre-Indian occupancy of the Atlantic seaboard, is the difficulty of realizing that a people sufficiently advanced to make so well-designed a weapon as the argillite spear-head should not have utilized stone in various other ways to meet their wants, precisely as the Indian did subsequently. No other form of implement than these spear-heads was clearly associated with them, except when found on the surface, and so not clearly separable from the true Indian implements associated therewith. Recently, the occurrence of a stone hammer, traces of fire—charcoal—and a flat stone bearing marks of a hammer or rubbing-stone, at a depth of nearly three feet below the surface, has rendered it quite probable that a proportion of the surface-formed relics of these patterns should be regarded as of other than Indian origin. If we examine a series of the stone implements of the only other American race—the Esquimaux—we will find that not only is the variation in pattern very considerable, but that precisely such forms of domestic implements as are now in use in the Arctic regions, among the Chukches, are common “relics” in New Jersey. In his recent volume of Arctic explorations, Professor Nordenskiöld describes a series of stone hammers and a stone anvil, which are used together for crushing bones.¹ Every considerable collection of stone

¹ “Voyage of the Vega,” New York, 1882, p. 483.

implements gathered along our sea-board, anywhere from Maine to Maryland, contains numbers of identical objects.

While many of these hammers and mortars are unquestionably of Indian origin, no valid reason can be urged that a proportion of them are not of the same origin as the argillite spear-heads. Indeed, grooved stone hammers have been found quite deeply imbedded in the sand—as deep as the usual depth at which argillite arrow-points occur; but this, of itself, is scarcely significant. So unstable is the surface of the earth where sand prevails, that the actual position, when found, of any single specimen, is of little importance. It is only when thousands have been gathered with great care, and under the most favorable circumstances, that any inferences may be drawn. This is true of the argillite arrow-heads, of which thousands have been gathered, and presumably true of the hammers and mortars, because such implements are common among an American race which uses also such spear-points as are so abundant in New Jersey. The similarity between a Chukche spear-point figured by Nordenskiöld¹ and an Esquimau spear figured by Lubbock² and the New Jersey specimens is very striking. Of course, such similarity may be considered as mere coincidence, but that it has an important bearing on the question becomes evident when the many circumstances suggestive of a pre-Indian race on the Atlantic sea-board are collectively considered. Singly, any fact may be held to be of little or no value; but when many of like significance are gathered together, they are self-supporting, and the one central fact becomes established.

Basing the supposition that palæolithic man was not the ancestor of the American Indian, because there is evidence warranting the belief that “the Indian was a late comer

¹ Ibid., p. 571.

² “Primitive Industry,” chapter xxxi, p. 453, Salem, Massachusetts, 1881.

upon the extreme eastern border of North America—indeed, the oldest distribution of the American races does not antedate the tenth century,” and therefore “the appearance of the Skrælling (Esquimau) in the Sagas, instead of the Indian, is precisely what the truth required”¹—basing the supposition thereupon, it was suggested² that in the Esquimaux we should find the descendants of that oldest of all mankind—*homo palæolithicus*.

Having given the strictly archæological reasons for dissociating certain of the stone implements found in New Jersey, let us now briefly refer to the historical evidence bearing upon this question. Have we any references to Esquimaux dwelling in regions significantly south of their present habitat? If there are such, then it is at once evident that the weapons and domestic implements of such people must now be buried in the dust of their ancient southern dwelling-places, and, these same spots being subsequently tenanted by the Indian, his handiwork must also be mingled with that of his predecessors.

The literature of this subject can be sufficiently outlined by reference to two authors. Major W. H. Dall, in “Tribes of the Extreme Northwest,”³ remarks: “There are many facts in American ethnology which tend to show that originally the Innuït of the east coast had much the same distribution as the walrus, namely, as far south as New Jersey.” I submit the rude argillite arrow-heads found in certain localities in such abundance, and at a significant depth, as an additional fact, tending in the same direction.

¹ “Popular Science Monthly,” vol. xviii, No. 1, p. 38, November, 1880, New York.

² “Peabody Museum Report,” vol. ii, p. 252, Cambridge, Massachusetts.

³ “Contributions to North American Ethnology,” vol. i, p. 98, Washington, 1877.

In B. F. De Costa's admirable résumé of Icelandic literature¹ there is given abundant evidence—ay, proof—that the people dwelling along the coast of Massachusetts, 900 to 1000 A. D., were not the same race that resisted the English on the same coast six centuries later. The descriptions of the people seen by the Northmen show that, of whatever race, they were well advanced in the art of war, and used not only the bow, but hatchets and the sling. They were “men of short stature, bushy hair, rude, fierce, and devoid of every grace.”²

It need, therefore, only be remembered that the relationship between the true palæolithic implements and those of more advanced finish and design is evident to every one who carefully examines a complete series. At the same time, the student is confronted with reliable historical evidence of the occupancy of the Atlantic sea-board by the Esquimaux as far south as New Jersey.

Does not the impression derived from strictly archæological studies, that all the stone implements of our eastern sea-board are not of one origin, go far to confirm the position of the historical student that an earlier race than the Indian once resided here?

De Costa remarks: “During the eleventh century the red-man lived upon the North American Continent, while the eastern border of his territory could not have been situated far away from the Atlantic coast. In New England he must have succeeded the people known as *Skrællings*. Prior to that time, his hunting-grounds lay toward the interior of the continent. In course of time, however, he came into collision with the ruder people on the Atlantic coast, the *descendants of an almost amphibious glacial man*.”

This “amphibious glacial man,” I submit, is he who

¹ “Pre-Columbian Discovery of America,” Albany, 1868.

² “Popular Science Monthly,” November, 1880, p. 38, New York.

fashioned the rude palæolithic implements, that, with bones of extinct and Arctic mammalia, are now found in the glacial drift of our river-valleys; and his "descendants," a rude people, with whom the Indian finally came in contact, were those who fashioned the plainly finished argillite arrow-heads and spears that are now, in part, commingled with the elaborate workmanship of the latest race, save one, that has peopled this continent.

The above eleven paragraphs, written more than twenty years ago, expressed my views then and substantially do to-day, but I am not so much inclined to the "Eskimo" feature of it. As already mentioned, such crania as have been discovered do not point in that direction, and possibly to craniology we shall have to look, for a final solution of the problem.

THE HISTORIC INDIAN.

The celebrated Swedish naturalist, Peter Kalm, traveled throughout Central and Southern New Jersey in 1748-'50, and in his description of the country remarks:¹ "We find great woods here, but, when the trees in them have stood a hundred and fifty or a hundred and eighty years, they are either rotting within, or losing their crown, or their wood becomes quite soft, or their roots are no longer able to draw in sufficient nourishment, or they die from some other cause. Therefore, when storms blow, which sometimes happens here, the trees are broke off either just above the root, or in the middle or at the summit. Several trees are likewise torn out with their roots by the power of the winds. * * * In this manner, the old trees die away continually, and are succeeded by a younger generation. Those which are thrown down lie on the ground and putrefy, sooner or

¹ Travels into North America, by Peter Kalm, London, 1771, vol. ii, p. 18.

later, and by that means increase *the black soil*, into which the leaves are likewise finally changed, which drop abundantly in autumn, are blown about by the winds for some time, but are heaped up and lie on both sides of the trees which are fallen down. It requires several years before a tree is entirely reduced to dust."

This quotation from Kalm has a direct bearing on that which follows. It is clear how, to a great extent, the surface-soil was formed during the occupancy of the country by the historic Indians. The entire area of the State was covered with a dense forest, which, century after century, was increasing the *black soil* to which Kalm refers. If, now, an opportunity offers to examine a section of virgin soil and underlying strata, as occasionally happens on the bluffs facing the river, the limit in depth of this black soil may be approximately determined. Microscopical examination of it enables one to determine the depth more accurately.

An average, derived from several such sections, leads me to infer that the depth is not over one foot, and the proportion of vegetable matter increases as the surface is approached. Of this depth of superficial soil probably not over one-half has been derived from decomposition of vegetable growths. Indeed, experiment would indicate that the rotting of tree-roots yields no appreciable amount of matter. While no positive data are determinable in this matter, beyond the naked fact that rotting trees increase the bulk of top-soil, one archæological fact we do derive, which is, that the *flint implements* known as Indian relics belong to this superficial or "black soil," as Kalm terms it. Abundantly are they found near the surface; more sparingly the deeper we go; while below the base of this deposit of soil, at an average depth of about two feet, the *argillite* implements occur. This is the condition in the

immediate valley of the Delaware and along the in-flowing streams, where, in every case, there was a deciduous forest, but inland, where pines only grew, and the "soil" was replaced by sand, there the surface contains both argillite and jasper, but what are the real conditions? The jasper and quartz are essentially confined to the vicinity of the water courses, while the argillite is scattered everywhere, without reference to any physical condition that now obtains. This can scarcely be an accidental happening.

The examination of many a so-called "village site," but what was probably but two or three wigwams with a single cooking-place in common, has shown that while argillite occurs, it is apt to be but a small proportion of it, and not unfrequently it is entirely absent. I have explored exhaustively more than one such site, and not found a trace of any other than silicious material, and not always where the finest examples of handicraft occurred. On the other hand, it not unfrequently happens that an area of an acre or more of sand, nearly devoid of vegetation and exposed for years to rain and wind until it is now a plain that has every appearance of having been a hillock or a ridge, and here argillite will be found exclusively. Surely this suggests the use of that material prior to jasper and quartz, for we know positively these were in use last or just previous to European contact and the introduction of fire-arms. Argillite, it is true, was never discarded, but it was not likely to have been used exclusively by certain groups of Indians while others made use only of silicious stone. That would indicate such a class distinction as we now have, but was certainly unknown in Indian time.

Tabulating a series of "finds" along the Delaware river's immediate shore and inland for a distance of a mile or more, it was found that in proportion as jasper and quartz were abundant, there was also the finer grades of pottery, and

where the whole range of worked stone was present there was a comparative absence of argillite objects, except the broad blades, probably used as agricultural implements; but where argillite arrow-points and knives are very abundant—hundreds of them—there was little else and only the rudest pottery. This was determined to be the rule after years of examinations of thousands of acres of land. As might be expected, there are some notable exceptions. I am not, however, disposed to look upon them as a serious objection to the view I have expressed. In archæology as elsewhere, insuperable difficulties as they seem to be, constantly arise, but it is lack of comprehensiveness of knowledge that magnifies and makes over-much of trifling matters. Place a sixpence near enough your eye and you can blot out the world. Many do this and argue accordingly. There are notable instances of the commingling of the rudest and most elaborate of Indian handiwork, a commingling that makes any attempt at dissociation apparently hopeless, but this arises from taking only a superficial view of the condition. The general character of the locality must be carefully considered. If it is one eminently desirable for habitation and has been so, if we may judge from what now is found, since early post-glacial or even in strictly glacial time, then its supposed continued occupation for centuries after centuries need excite no wonder, and the traces, as claimed, of occupation by an earlier and later people would necessarily gradually accumulate, just as almost all the cities of importance along our inland rivers and many coast-wise towns were originally Indian villages. The features that attracted the colonists were quite the same as those that influenced the Indian.

There is another view to be taken. By trenching an Indian village site, where the present surface presents a hopeless commingling of jasper and argillite, the story of the

earlier or argillite period is told so plainly that no doubt can be entertained thereafter. We know how true this is of ancient cities in the so-called civilized world, and the application of it can be made here with just as good a reason and assurance of as tangible results.

Again, we cannot escape erroneous impression, if we do not, when in the field, consider the changes effected during the last three centuries; those wrought since the advent of the European settler. The Indian let well enough alone. He scarred the face of the earth but little. His scattered fields were not of vast extent and natural plains were cultivated. Extensive clearings of the forest were not undertaken, and when fires occurred, Nature repaired the damage in her own time and way. The Indian, in short, kept in touch with Nature just as closely as the European persistently holds her at arm's length and delights in destroying her choicest work. Could an archæologist have visited the valley of the Delaware in advance of the destroying hordes that have blighted it now more effectually than ever locusts swept a western plain, he could have turned the later pages of the earth history here and made for us clear as noon-day much that now is dark as night. They were not torn then nor displaced, but lay, one upon the other, in proper position. Now, there are but the veriest fragments left, and it is an almost hopeless task to piece them together and be able, here and there, to read a little. What, I submit, has been read, and about which there is small room for discussion, is that so long ago that even dreamy tradition has framed no fabulous story of a simple fact, man appeared upon the scene, and from that distant day until now his presence has not been wanting.

It is scarcely necessary to continue with illustrative examples showing the changes since maximum glacial activity that have occurred. We have, if my own field work—and

that of Mr. Volk—has not grossly misled me, both an earlier and later argillite horizon—the palæolithic and the pre-Indian. It is analogous possibly to the traces of man in the loess of Kansas and Nebraska.

[Since these pages were written, my attention has been called to an article on Nebraska's ancient (?) man in the *Century Magazine* for January, 1907, by Prof. H. F.

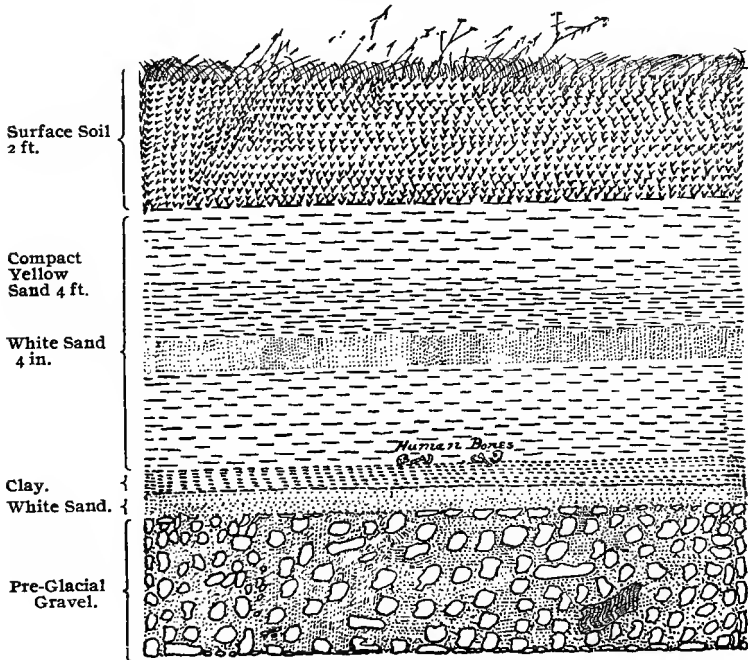


Fig. 1. Human bones beneath stratified deposits, discovered by E. Volk, 1899. (See also Hrdlicka on Trenton Crania. *Bul. Amer. Mus. Nat Hist.* vol. xvi, pp. 23-62, 1902.)

Osborne. The author raises our hopes, at the outset, that here we have something definite, at last, but we conclude the perusal, finding ourselves precisely where we started, in the dark.

A foot-note, however, it seems to me, is somewhat suggestive. Prof Osborne calls therein attention to the fact that Mr. Holmes suggests the Nebraskan finds as of the Blackfeet Indian type of cranium. If the crania of the North American Indians have developed into "types" and the skull of a Delaware can be distinguished from that of an Iroquois, and those of Canada from those of Texas, has not the Indian been on the continent a long time that such differentiation should have been brought about? Is evolution such a rapid process that bones can be so readily affected? It can be understood that soft tissues may be influenced promptly, comparatively speaking, by change of environment, but is this equally true of the bony framework? Would evolution be as likely to affect a bone, because the demands made upon it varied a little? It is always possible to hang a new hat on an old peg, and we generally do so. Why may not Nature have much the same old fashioned way of doing things? But competent craniologists accept the "types" of skulls as demonstrable, and must it not have been a very long time since the changes became established, and a longer one before the change commenced and during it? A fact (?) like this establishes the antiquity of man in North America as distinctly, as unequivocally, as the dispersion of his artifacts throughout the surface soils and their less frequent occurrence in the under-lying gravel.]

Further exploration, I do not anticipate, will lead to reaching any other conclusion, and leaving these phases of the subject, what now of the antiquity of the historic Indians?

INDIAN LEGENDS.

Legend, as the Walum Olam; inscribed tablets, as the Lenâpè stone and the wild guesses of the closest student, have led to as many views of the origin and antiquity of the Delaware Indian as there have been those who have paid any attention to his existence, and their name is Legion.

The Walum Olam has been translated, but far too much importance is placed upon it as accurate history. Legend, based upon facts, the particulars of which have been long forgotten, lost all sense of number, as applied to years. "Once upon a time," as in our fairy tales, should be the opening words of the Walum Olam. It records a migration, but does not specify the length of time required to accomplish it. Names, apparently of individuals, may as reasonably be looked upon as groups of individuals or as dynasties.¹

The mysterious, all comprehensive, encyclopedic Lenâpè stone, with its mastodon, the lightning's stroke, the tragic end of man and beast and various symbols of we know not what, is, if all else of Indian handiwork is considered, far beyond the skill of an aboriginal artist. The specimen has been, most wisely, relegated to the limbo of obscurity. All evidence, centering in the stone itself, points to its fraudulent character.

It is known that the Indian was in possession when the European adventurers came, with their fair assertions and with foul intent. This is all *we know*, perhaps, and it may be, all the rest is *speculation*. But, in less than three centuries, much colonial history has become vague. The sharp outlines of the facts have been worn away in passing through the minds of generations and it is not, probably, at all unreasonable to hold that a broken stone or a fragment of a shell speaks with greater accuracy than the so-called history that remains to us. A potsherd lying in the soil, to-day, speaks as unmistakably of the one-time presence of

¹ Certainly nothing can be more unfortunate than for the archaeologist to turn genealogist and so closely reckon the past as to reach the conclusion that the Delaware Indian came into this valley some four or five hundred years ago. Absurdity can go no further. Caution should be exercised in the ascription of antiquity, but not to such extent.

an intelligent man, as a marine shell embedded in solid rock is eloquent of an ancient sea.

It is a legitimate question that one asks: for how long a time was the Indian in possession? As he did not know, and when questioned could give no reply that was at all helpful to the earlier seekers for information, it follows, logically, that our only resource is such traces of himself as remain, comprehensively considered. "Indian relics," as we gather them from the surfaces of newly-ploughed fields, suggest time past, but not antiquity. They lead us little farther back than the English coppers and colonial coins with which they are associated. The circumstances of the occurrence must be more definite than accidental bringing to the light when fields are cultivated. Fortunately such conditions are available when field-work is systematically undertaken. Quite as prominently as hunting and fishing, agriculture and war entered into the lives of the Delaware Indians, did the fictile art. They were potters, too, of no mean skill. To-day, nothing indicative of the Indian is more widely scattered than potsherds. Curiously enough, I have found them when the most careful search resulted in finding nothing more. The ware was not a mere moulding of raw clay. I demonstrated this, some years ago, by testing samples in our modern porcelain kilns. It was shown that the material had been so prepared that it resisted shrinkage or distortion under an intense heat; one far higher than the Indian potter could command.

And here, the question at once arises, whether the Indian is an immigrant, who forcibly displaced a predecessor, absorbed another race or found an unoccupied but once inhabited country, and however coming, did he bring a knowledge of pottery with him? Here we are groping where there is lack of light, but the comprehensive consideration of the subject, for which I have contended,

throws, I think, a ray of light into the Cimmerian darkness, and the impression is born, if it does not wax very strong, that the art of pottery making was unknown in pre-Indian time or very rudely practiced, and that the Indian was not an accomplished potter when he began his career in this region.

Be all this as it may, whenever we find traces of man that include potsherds; prior, of course to European colonization, we may feel assured that we have to do with the Lenni Lenâpè or Delaware Indians. When such traces of early man are not so associated, we may have evidence of inhabitation here of a pre-pottery age. It is scarcely necessary to add, no trace of pottery ever occurs in the glacial gravel or those earliest of post-glacial deposits, of sand, small pebbles and an occasional boulder.

THE INDIAN VILLAGE.

What I have recognized as a "village site" is such evidence of continued occupation as baked and charcoal-charged earth, due to the presence of fire on one well defined spot for a considerable period; an abundance of heat-cracked pebbles, showing that hot stones were used to bring water to the boiling point; often a distinctly paved hearth; potsherds innumerable; bones, often charred, of animals used as food—including human (?) bones; many broken implements of stone and some of bone; and often, implements that appear to have been lost, forgotten when a moving took place or were discarded for like objects of better design or finish. Usually we find one and often two or three hand mills or querns for crushing maize, seeds and nuts, their Tachquahoakan, and in some instances the upper as well as lower stone is found.

Under peculiarly favorable circumstances, there can be traced with some slight degree of conviction, the precise wigwam sites surrounding the fire-place, but this latter is not always the centre of a circle. A good deal depended upon the "lay of the land" and occasionally it appeared as if a protected fire and oven was used rather than an open one, with pots in the embers and hot ashes. It happens, also, that we sometimes find traces of a long-continued fire, with bushels of heat-cracked pebbles and not another trace of man's one-time presence. Here, it is probable, pottery was baked, and we have in these traces all that remains of an Indian's primitive kiln, though what part was played by the burnt pebbles, I do not see at all clearly. Again, we may find pottery and a few arrow-points and two or three stone drills and scrapers. If the ground shows no discoloration or alteration of texture, such as fire produces, the occupancy of the spot was likely but temporary. On the other hand, mills or querns are often found, often weighing from thirty to fifty pounds, without any trace of other object of human interest near them. If a "village" once existed, every vestige has been removed. I suggest that these were permanent querns and, when in use, were surrounded by nut-bearing trees, the fruit of which was gathered in season and carried to the "village" nearest by.

It quite frequently happens that a single form of implement will be found in large numbers and in such close association that the suggestion of burial for purpose of temporary concealment arises. Such a cache, if scattered by the plough, gives in time the appearance of a village site, by reason of the abundance of the objects now scattered over a considerable area, but the absence of potsherds shows that the objects found are not evidence of a one-time dwelling site or even a period of transient occupation. When an abundance of arrow-points and spear-heads, and no other

form of stone implement associated with them, occur on a comparatively limited area, the impression of a battle having been fought naturally, perhaps, occurs to the collector; but no unmistakable trace of a pre-historic battle-field was ever discovered or is likely to be. Certainly, we have no record—now historic—of any Lenâpean Napoleon who on the sandy plains of South Jersey met his Waterloo. The single arrow-point that we now find as we ramble about the fields was more likely to have been shot at a deer than at a human foe, and large numbers in a little space more than probable is but the dispersion of a cache, begun when the plough first up-turned the sod and has continued ever since. Battle, murder and sudden death were no doubt common enough, but all this is but inferential, based upon the knowledge we now have of savage life, but this state of affairs once obtaining, does not call for elaborate battle-fields that we can now trace. The palæontologist can build up an animal from a single bone, but from a single arrow-point to elaborate a tragedy is not the province of a practical archæologist.

If the village site, as positively determined, was a feature of the present surface, it might be said of them, that they were occupied and abandoned at or near the date of the arrival of the European settler, but such is far from being true of them. They occur, distinctly, under such a variety of conditions that they establish a range in time of vast significance. Some are so deeply buried that changes have taken place since their abandonment which required a long series of years to accomplish. Others again have been abandoned and re-occupied, and a layer of undisturbed soil, gradually accumulated, lies between the relics of the earlier and the later occupation. More significant, perhaps, than all else, is the abundant evidence of protracted occupation in situations that are now wholly uninhabitable. Beauti-

fully illustrative of this, are the village sites in the present low-lying meadow land along the river, and which is subject to overflow at any time; a heavy rain, even, bringing the river to a freshet stage. These meadows are now but five feet above high-water mark. Digging to that depth or even less, in some places, we come to water and find also ashes, charcoal, pottery, implements in abundance and the bones of animals used as food. All we find, at the horizon of the water and below it, goes to show that the village site was one long and continuously occupied, and very marked must have been the physical changes to have rendered the place uninhabitable, as it now is, and to account for the accumulation of from three to five feet of alluvium that now covers it. Nothing was buried, but all gradually inhumed. The assertion that the spot was temporarily occupied and abandoned at short notice and re-occupied when conditions again became favorable, is but another example of that gross ignorance of the real conditions which, as when treating of palæolithic man in the same region, characterizes its author. Archæological impressions should never be based on a single discovery, but too often attempt is made to balance a cannon ball on gossamer. Those who oppose all evidences of antiquity deliberately blind themselves and then insist that no one can see. To preserve the slightest semblance of consistency, they are forced to do so.

No upland village site, of which I have any knowledge, has proved so fruitful of evidence of advance in savage life as those of this meadow tract, so exhaustively and scientifically explored by Mr. Volk. They exhibit the Indian at the high-water mark of his career and certainly such a people would never have dwelt on so unsanitary a spot as it now is and from which they were constantly likely to be driven by a rise in the river. Especially unlikely is the choosing of such a location, if then as now, when not a

thousand yards distant they could have built their homes at an ideal spot, fifty feet above the river and with an outlook that commanded a wide reach of the river valley. Unquestionably, when the pottery-using, flint-chipping Indian came to dwell here, the river, comparing that time with the present, was not the same; the meadows were not as they are now, the creek near by—now nearly silted up—that then flowed directly into the river, was quite another stream. Just what the changes have been or how brought about, is for the geologist to decide, but vast changes there have been, and Mr. Volk's view that the village site he unearthed was one of significant antiquity cannot be successfully contradicted.

The purely gratuitous assumption of Mr. Holmes that because one piece of pottery found by Mr. Volk was decorated after the manner of Shawnee fictile ware, that such pottery dated from the almost historic period of the Shawnee settlements along the Delaware, has no bearing whatever on the antiquity of the site. The fact is, the ornamentation of pottery as made here was so indefinitely varied and at times truly artistic, that near approaches to the specimen found by Mr. Volk are not unknown and that one vessel might readily have been designed and decorated by a Delaware who had never seen or perhaps heard of a Shawnee.

Inter-tribal commerce, too, must be taken into account. Considering that I have discovered Catlinite pipes and beads, that must have come from Minnesota, and obsidian arrow-points, flakes and scrapers that either came from Utah or Oregon, and that many a southern and western form of implement, ornament and pipe has been found hundreds of miles distant from where it was made, it is not at all inconceivable that even pottery, fragile as it is, might have been brought from a distance, or, even a fragment of a vessel, the decoration of which, taking the fancy of a potter here, have been copied.

Nor is this all. The village site was also a place of burial. Now, while the Indians in New Jersey had no one or fixed burial custom, as every archæologist who has worked in the field well knows, it is extremely improbable that one of the methods of disposing of the dead was by immersion. I hold that no better evidence can be had that this meadow tract was practically an upland one, during Indian time and not subject to such frequent and complete overflow, than that it was used for burials as well as a dwelling site. The elevated plateau so near by, to which reference has been made, is full of graves. They may be expected whenever one elects to dig, and no trench of any considerable length but exposes one or more. The accounts of early visitors to this country contain many a notice of burial customs, but none of where the body was placed in water.

It is of first importance, finally, to consider the extent of this village site, the home not of a few but many families and the vast amount of material Mr. Volk and others have recovered from the spot, all of which goes to show that the period of occupation of this river-side and creek-side site was a very protracted and continuous one.

Still another consideration of village sites, and one perhaps of more importance in its bearing on the question of the antiquity of the Indian than all else, is the fact that as yet there has been no strictly argillite village discovered such as I have described as "Indian." All such are characterized by much pottery, by artistically fashioned pipes, jasper and quartz implements, polished stone celts, gorgets, amulets, trinkets for personal adornment and the quern. Argillite implements were always present, but, as we have seen, the use of this material was never abandoned. On the other hand, a village site proper, with its fire-place, hearth, potsherds and argillite implements exclusively, or traces of a single habitation or even a number of them that was

marked only by argillite and no pottery, has not yet been found and I suggest that after an experience of more than thirty years a-field and finding nothing of the kind is evidence of some value, negative though it be, and worthy of attention. I believe such argillite villages never existed. The pre-Indian user of argillite was strictly a nomad and more of a savage than the Indian, and the wider distribution of argillite than quartz and jasper is due to his wandering habit. He appears not, as an "argillite" man and unacquainted with pottery, to have acquired the village habit.

THE INDIAN SHELL-HEAP.

A feature of the archæology of the region herein treated of and more particularly so of the seaboard of the State, parallel to the river valley but fifty miles away, and not unknown to many an inland stream, whether flowing into the Delaware or the Atlantic, is the shell-heap.

The late Dr. Samuel Lockwood, years ago, gave an excellent account of those he had examined with critical care, near Keyport, N. J., and many references have been made to the deposits of shells through man's agency, occurring along the coast wherever the edible molluscs were readily obtained in quantities, but the age of these artificial deposits has been overlooked by recent writers who have essayed so earnestly to modernize the pre-European occupation of the country.

Not one of the very many shell-heaps that I have examined but must be ascribed to the historic Indian, but the beginning of many such shell-heaps was in remotely pre-historic time. Some, indeed, so far as I could determine, contained no trace of pottery, but not one but had quartz and jasper chips and broken implements. Argillite was

often present, but I could never find it exclusively so. Shell-heaps, then, it is fairly safe to presume, are all Indian in origin, but since their beginning, there has been a decided sinking of the shore line and the base of more than one well-defined heap has been found to be at least four or five feet below low-water mark. These heaps were started on what at the time was firm earth and dry earth, for the Indian was no lover of a damp or clayey soil. It is true, the coast has been said to be sinking pretty steadily and, as a geological phenomenon, at no laggard's pace, but we have no evidence that such subsiding has been progressing with no remission. Very true, more than one original light-house stood where now is open sea, but such sinking of the land as the shell-heap hints of, was not a matter of yesterday and enormously farther back in time than loss of shore-line within the memory of man.

We can see, as we stand on one of these ancient shell-heaps, a different country surrounding us, a different fauna prowling in the adjacent forest. We can see the Indian from the main land coming hither for his winter's supply of shell-fish and trudging back again to his forest-hidden home. The teeming past is widely unrolled on such a spot, and nowhere else can we get a better, a more comprehensive view of the Indian's career than by these great heaps of shells that year after year, layer upon layer was builded up, to remain, as they do still, enduring monuments to these wild red men of the woods.

Returning again to the village sites deeply buried now in the present flood-plain of the river, we find, when careful search is instituted, something very nearly akin to a coastwise shell-heap. The mussels—*Unionida*—were not despised as food. Many a considerable layer of the shells, with ashes, charcoal, fire-cracked pebbles and potsherds, is found, and the significance of the distance below the present

surface, at which they occur, must not be overlooked. The turf above them is not the rapid heaping of mud displaced from a nearby point, during a flood. Absolutely no trace of cataclysmic action is to be traced. All goes to show a gradual accumulation of soil, and a new surface formed that covered the shells, and it was in time itself covered, so that many a defined stratum now rests upon the spot where the mussel hunter gathered his harvest from the river or the tributary creek.

There is some evidence of a considerable difference in the ages of these fresh-water heaps of shells, but none are so distinctly old as to lack unmistakable traces of the Indian. All have potsherds, but these, in one instance, on Crosswicks Creek, were so rude and only a few argillite flakes found with them, and the depth of the accumulation of shells, taken together, were eloquent of a past so remote that the Indian himself may be looked upon as a feature of antiquity and not a recent comer. It cannot be objected that the water of the river was, if we go back significantly far, too cold for molluscan life, for deep in the gravel, at an inland point, Mr. Volk and I found a valve of a *Unio* and since then other specimens have occurred in like position.

The shell-heaps on the seacoast point unmistakably to a remote past, and I am not sure that much the same antiquity can be denied the similar deposits in the river valley.

There is still another phase of this feature of the one-time savage life prevailing here. Marine shells are not uncommon at a horizon just below the alluvial deposit, still forming, that now constitutes the immediate flood-plain, where the river is hemmed in by a bluff that permits the highest stages of water only to reach its base. This alluvium is almost as tenacious as clay and sustains an exceedingly rank vegetation and vigorous forest growth. It overlies a nearly white sand and small pebbles, much as the present river bed now is.

Were these shells but few in number, we might well conclude that they had been brought hither by the Indians when returning from the coast, or some point on the bay shore, more than one hundred miles down the river, but these shells are too abundant and the species too varied and many too small to be of value as implements or as food. Their presence rather suggests that the salt water reached, in at least earliest Indian times, as far as now the tide extends. If so, a marked change, indeed, has taken place in the levels of land and water, and all since palæolithic—and his immediate successor, pre-Indian—man had passed away. We need not wonder at the antiquity of the Indian, but may marvel, indeed, that any one should question it. With these marine shells are potsherds, arrow-points and charred bones of deer, bear, and other mammals and many fishes.

THE OBLITERATED BROOKS.

The fields are far from level on the plateau that parallels the river on its eastern side. They have for centuries, as fields, been subjected to the wear and tear of innumerable intersecting brooks and by many considerable streams that flow directly into the river. The result has been to create broad valleys like those of Crosswicks and Assunpink Creeks. These have their Indian village sites scattered for miles along the immediate banks of the streams. A far less prominent feature of the land, as it is to-day, is the spring brook, seemingly now as it has ever been; but this is an error. The brook may prove of much archæological significance, when we come to trace the country's history back to pre-colonial times. Some of these small brooks are extraordinarily tortuous and several miles in length. The slight depression in the surface along their course is so inconspicuous that we scarcely notice it, until at length, it nears the face of the bluff facing the river valley. Here the brook bank becomes precipitous and the stream at last enters the

flood-plain of the river through a short but deep ravine, having worn its way down to near tide level from the plateau's surface, fifty to one hundred feet above it.

As simple brooks, these little water courses would not figure importantly in Indian history, but it would appear that some of them were considerable streams centuries ago. The deforesting of the land, the draining of the swamps and cultivation of the soil have aided in lessening the volume of water, and changes with which man was not associated have undoubtedly taken place. Whatever the causes, the evidence is irrefutable that many an insignificant brook

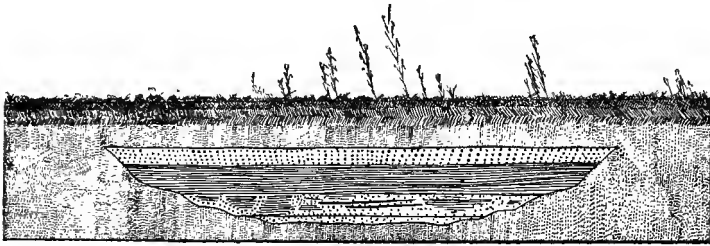


Fig. 2. Cross section of obliterated brook. Drawn from photographs. Artifacts were found at junction of the sand and clay, beneath the broad band of clay, which was overlaid by a deposit of washed, white sand. This was covered by a foot of sand and as much of the surface soil.

of to-day was a considerable stream in days gone by, and where we can step across the trickling brook an Indian might easily have floated his canoe. Then, there are other beds of upland streams that have been dry for ages, but still they can be traced.

Cross sections made where these narrow valley-like depressions of the present surface occur, tell the whole story so far as the one-time brooks are concerned, and in practically every case, it is an archæological story. The modernist may have much to say about intrusive objects, but this will not hold. These cross-sections show stratification and of material, too, that did not permit the passage of artifacts. See Fig. 2.

One such cross-section exhibited, just beneath the present soil, a deposit of tenacious clay, it overlying a compact layer of nearly white sand and this in turn resting on coarse pebbles. The pebbles had been the bed of the stream for a time, then the sand gradually accumulated and at last clay, washed from a great deposit near the surface and miles away, had been brought down and settled where I had found it, at a bend in the channel of the ancient brook. The archæological interest of it all consisted in the occurrence of pebble-hammers and chips or flakes, artifacts as unmistakably as an arrow-point. To-day, there is not a trace upon the surface of the field indicating it was traversed by a broad and shallow stream. A brook, at present, runs not far away, that may be the same stream deflected from an older course. Often, in mid-summer, it is nearly dry, and again, after heavy rainfall is almost a raging torrent. Such brooks are common, but this one has a history not common to them all. It finds the meadow or flood-plain level after passing through a ravine, fifty feet in depth. In October, 1903, the river was so swollen that the flood-plain was submerged and for about two hundred yards of its length, the brook was reversed, so to speak, the river flowing up the gorge. In this we had a return simply to the original or an earlier condition, when the present meadows were permanently under water, and the river here a wide lake. When this brook, then, was a wider stream and before it had cut its way down to the flood-plain level, Indians were dwelling near its banks, and at a depth of something more than six feet, Mr. Volk¹ found human bones, either intentionally buried or drifted to the spot during a freshet.

It certainly cannot be said, in such a case as this, that the changes that have taken place have all occurred within his-

¹ Crania of Trenton, N. J. By Ales Hrdlicka. Bulletin, Amer. Mus. Nat. Hist. New York, 1902.

toric time. These upland brooks may well have been sparkling in the sunlight when the Delaware was yet a glaciated stream. They were the drainage outlets of the high, dry, habitable land that extended from the river to the sea. They are much diminished since that distant day and some have, as already pointed out, wholly disappeared. The majority are now reduced to the minimum of continuance. May it not be that many a stream, to which the Indians gave no name save "Sipotit"—a little brook—was a water course of importance to the argillite man of an earlier day?

Could we reconstruct the surface of the region and behold the land before the river had retired to its present bed, we would see marked differences and to our vast relief, no commingling of argillite and jasper and hopeless confusion of artifacts ancient and comparatively modern.

THE ADVANCE OF SKILL.

Attempts to trace advance in skill, whether as chippers of flint or manufacturers of pottery, have not been at all fruitful of satisfactory results. It can as safely be said that some were skillful and others not, in what they undertook, and so the great range from rude to elaborate of all their handiwork. Much, too, depended upon the material available, and yet when various localities are compared and arrow-point makers' workshop sites are examined critically, an impression is invariably had that possibly the ruder work did indicate an earlier day. I would not be inclined to place much value on this, were it not that some localities have in their surroundings, the depth at which the artifacts occur and every other circumstance appertaining to the "find," what may be called "collective evidence of age"; something very real to the explorer when in the field, just as when a jasper and an argillite horizon are compared, but unfortun-

ately not transmissible to the reader by either words or pictures.

Whatever the ultimate conclusion of the practical archæologist, there is no escaping the comprehensive one that the historic Indian, comparatively recent comer as he is, is to be treated archæologically as well as historically. Among the many hundreds of grooved stone axes that I have gathered, one very recently found is coated with limonite and in this respect differs in no way from millions of coated pebbles found in the so-called Columbia gravel. It was not found in a deposit of bog ore or near any spring whose waters are surcharged with the metal in solution, but on a high and dry field, where no other moisture was reached save rain-fall. This axe flatly contradicts what I have stated in a preceding page and have always maintained, that no distinctly "Indian" object was so encrusted, but argillite objects were often found in this condition. I let the two statements stand, but submit this axe, one of marked artistic design and finish, as evidence of the antiquity of the Delaware Indian.

Mr. Volk inclines to the belief that the grooved axe is a comparatively recent implement of the Indian, as he failed to find it in any of the trenches he dug and from which such a vast amount of archæological material was taken. I should say, from what I have observed, that it is not of common occurrence in graves, where the ungrooved, polished celt is often met with.

The limonite, as deposited on this axe, could not have been, I am assured, rapidly deposited. The chemical change involved was one requiring a long lapse of time. Why all the other thousands and tens of thousands of Indian relics should have escaped, I do not know. They appear to have done so and so far are held to be not so very old: this single axe tells a far different story and strengthens the view that

as surely as that not all relics could be of the same age, so there may have been a decided advance between the first Indian implements and those last made.

CONCLUSION.

Having set forth as clearly as it was within my power to do, the several reasons for the belief I have so long entertained as to the antiquity of man in the valley of the Delaware, I desire, in conclusion, to refer briefly to a condition obtaining which perhaps has more significance than all else that can be produced bearing upon the subject. This condition, most happily not a matter of dispute, is the vast quantity and wide dispersion of what we know collectively as "Indian relics," but which I have endeavored to separate into wholly distinct, and in a measure, unrelated classes.

Subjecting to closest scrutiny and without bias, alike the upland field and the low-lying meadow, the forest and the swamp; tracing the course of every inland creek and the shore-line and islands of every river; taking into comprehensive and possibly exhaustive consideration every condition under which the traces of pre-historic man are found and contemplating their number, literally millions, there are but two conclusions possible at which the archæologist can arrive; either there was a dense population that was here for not a long period, or a sparse population which occupied the territory under consideration for very many centuries.

A dense population calls for what we may truly call Indian cities, but of such we have not been able to find satisfactory traces. It is true that a place situated as is the present city of Trenton, N. J., at the head of tide water would naturally be a centre of commercial activities and interests. Such localities as surely and logically attract as a magnet does iron filings. It has been a town site always,

we might say, and as it attracted the aborigine, attracted the European settler and never was founded by an individual as have been most towns of which we have knowledge as to their origin. The falls of the Delaware—its original English name—has better claim to be called a centre than a town. People there were continually coming and going, but the resident population may have been small. It was a busy place but not what we now call a city. It possibly never knew quiet until the Indian was dispossessed and then it slumbered peacefully for two hundred years.

The Indian, depending largely upon hunting and not inconsiderably upon agriculture, had no need for a large town and it is doubtful if the most populous ever ran much into the thousands, but where the location was, by reason of its convenience, *i. e.*, easy of access by both canoe and over-land, it became a fixed condition from the very beginning. As such, we can understand why the relics we collect should be in such numbers and beaten so deeply into the soil that some have reached at length to a depth that nears the horizon of an earlier people.

With one such former site of an Indian town I have long been familiar and am thoroughly convinced of its moderate population, extending over centuries rather than a dense population which tarried here but a number of years. The relics that we now find, the varying character of the graves and the significant depth of the cooking sites, all give an impression of antiquity and suggest improvement in certain directions during the continuance of the town, as such.

It may be said that every stream of sufficient volume to permit of canoe navigation had a "town" upon its banks, and villages and single settlements or a single family were at every desirable, if not at every available point, and here relics are still found in abundance, but between each of these many streams lies a wide stretch of land, then heavily

forested, and what of such territory? Certainly it would require a long time for the personal possessions of these aboriginal villagers to be scattered over the entire surface of the State, and they are so scattered and in numbers that have a great deal to do with the question of the antiquity of their one-time owners, and I do not include the omnipresent arrow-point in this consideration.

A word now with reference to them. There are over five million acres in New Jersey, and if we allowed one arrow-point to an acre, this number, brought together, would fill no trivial space in a museum and would be impressive in more than one direction, but while there are many acres where they seem to be absent and possibly may be, but I am not convinced of it, there are others where these same little arrow-points are so abundant that we are probably within bounds in allowing at least one to the acre, for the whole State. We leave it to those who are statistically inclined to estimate the time required to make and to lose them and the probable population that used these five millions of arrow-points, bidding them remember always that the ruder argillite artifacts outnumber them, perhaps, ten to one.

But little need be said in this final summing up of this discussion of a vexed question. That the region was profoundly affected by the glacial conditions of thousands of years ago, no one can deny; that an arctic fauna wandered over the plains that escaped the encroaching ice, no one doubts; but was man a member of that fauna? My claim is that he was. Time passed and other conditions came into being and man of less primitive mould replaced the ice-age nomad. He passed, and the Indian we all know, the historic Red man came upon the scene. Looking back to the day when I first picked up an arrow-point and gave it serious thought, and recalling all pertaining to ancient American man that I have seen since then, the record of the

past does not seem to-day one difficult to read. Indeed, I hold that it never has been, and maintain, as I have done since the questioning of man's antiquity in this region began, that the manifold attempts to modernize all traces of man on the eastern coast of North America can safely be relegated to the limbo of misdirected energy. Studied in the proper spirit and after the needful preliminary study of archæology as a whole, the student will find himself, when in the field—ever a more desirable place than the museum—face to face with evidences of an antiquity that is to be measured by centuries rather than by years.

Archæologia Nova Cæsarea

No. II

BY

Charles Conrad Abbott, M.D.

“The sky will take on a deeper blue, the sun will shine more brightly,
the world will everywhere appear more beautiful, when theory is reduced to
its proper position as a servant, and facts alone are acclaimed our masters.”

1908

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MACCRELLISH & QUIGLEY, PRINTERS.
1908

PREFACE.

IT HAS been maintained that the term Archæology does not apply to North, Central or South America, but that this considerable portion of the earth's habitable surface was not a scene of human activity until Asia, Europe and Africa and the isles of the South Seas had been so long populated that humanity was an old and not very creditable story, and then about the dawn of what we know as the historic period some wandering unfortunates from other lands found some one of the three Americas, and finally drifted into the other two. According to these authors, and they are about all who have given attention to the subject, the history of America is about the heaviest, dreariest, most somnolent matter ever preserved in print, until Columbus made his discovery, or possibly from the supposed visit of the Norseman, four or five centuries earlier.

All this may be true, but, happily for those archæologically inclined, the probability of its so being is still an open question, and, despite the earnest, and we hope sincere, efforts of the ethnologists to modernize every phase of the subject, the thought will persist in coming to the fore, when field-work is in progress, can all this be within the range of history, or, at most, on the shadowy border of it, just prior to Columbus sighting land in the Antilles?

Whatever may be the merits of the question, whether or not Nature makes any sudden leaps by way of varying the monotony of supposedly very orderly and leisured evolution, it does not seem creditable that the Americas should have remained unknown until all other lands were occupied, and

that even people should have accustomed themselves to the rigors of superlative heat and cold before the tempting plains and forests, with temperate, if not irreproachable, climate should be discovered. If all this happened, as asserted, how finally was the continent reached, and from what other country did the discoverers come? Unfortunately, the ethnologists have been too busy with details of pottery ornamentation, origin of earthworks and genesis of problematical objects of Indian handiwork to take up so considerable and really important a subject as Man's origin in America. They admit they do not know, and it is understood among the elect that they do not care. The chief canon of their ethnologic law is that whatsoever might have happened yesterday could not, by any possible means, have happened the day before. It is to be hoped that a day will come when the pen and spade can lie down in peace, and what is found by the man in the field, and what is said of it by the man in the museum, will be the truth, the whole truth, and, better than either, nothing but the truth.

It is not a scientific, which is simply a common sense, procedure to consider the conditions of a limited area, such as a single river valley, without correlating these with those of the whole country, or, at least, a significantly large part of it. Certainly it is wholly without warrant to give the valley of the Delaware consideration as to archaeological or ethnological significance on the supposition that it is something separate and apart from the land north, west and south of it. The general pre-history of the country, so far as it has been deciphered, tends undoubtedly to show that the general spread of the Indians, as we know them, occurred a long while ago, sufficiently long ago to bring about change of language and customs, and if exploration is a natural impulse, then it is inherently improbable that so considerable and readily accessible an area as the valley of the Delaware

and immediately adjacent country should have been unsuspected, unknown, unvisited and unexplored until a few centuries ago, when everywhere about it, save its eastern seaboard, was the home-land, and long had been, of Algonquin and Iroquois.

Many parts of the world were unknown to the civilized nations of Europe and to us until within quite recent time. Discoveries have been made in our own day, but nowhere, unless some coral island in the Pacific ocean, was it of uninhabited land. Some species of the *genus homo* was there, or very recently had been. So, too, if the Lenni Lenâpé knew nothing of the valley of the Delaware, where they finally became a prominent factor of aboriginal politics, until some five or six hundred years ago, did they or not find the region uninhabited then, and, if so, had it not been? It is difficult to reconcile what has been seen and found here in the two centuries since the Indians' departure, with the ethnologist's view of extreme modernity.

The reader who patiently plods through the manifold chapters of the Jesuit Relations, and even when he turns to the less practical but no less earnest relations of the Moravian missionaries among the so-called Delaware Indians, cannot avoid vexation that these enthusiasts were so profoundly concerned with undemonstrable problems and so little concerned with the actualities they confronted. The Indian in his home, unaffected as yet by the blight of an exotic civilization and his mind untroubled by vagaries of foreign mystics that were wholly beyond his powers of comprehension, as they have ever been a profitless source of wordy worrying and without tangible results where they originated—this man, this distinct species of man, had he been exhaustively studied by those who had the golden opportunity, would not now be, to so great a degree, a mystery in many respects and the fruitful source of unfruitful discussion.

Collating all that has been recorded by these Moravian missionaries, who were eye-witnesses of the daily lives of the continent's native race, we are more impressed with what they failed to make note of than with what they seemed to consider of first importance. It was this overlooking of the details of daily existence that has resulted in later time to so much speculation as to the probabilities and led to the preparation of ponderous tomes that too often, on matters of most interest, leave us at the colophon where we were, at the title page, in ignorance. The author with a pet idea is elaborately exploited and the Indian lost sight of. Necessarily, the opportunity once afforded can never re-occur. The Indian that was, is not. The archæologist, to-day, replaces the historian of nearly three centuries ago and his is no light task, if, gathering the fragmentary evidences of the Indian's one-time presence, he endeavors to reconstruct the past. He feels

"like one
Who treads alone
Some banquet hall deserted."

Yet, wandering a-field or patiently digging where a wigwam once has stood, he can scarcely refrain from giving his imagination reasonable play and placing, when he finds a relic, its fashioner before him, in suggestive attitude and surroundings. The fauna, the flora, the physical conditions of the region's pre-historic days pass vividly before his eyes. For the moment, the past is the present and the archæologist is himself a red-skinned rover of centuries long gone. Such an experience is delightful if one's heart is really in his work, but it is equally dangerous. The imagination is a most valuable servant, but a bad master. It delights in the demolition of fact and enthrones fancy, however tottering the throne may be.

He who finds an Indian relic to-day is justified in asking himself what was its use? Did he not do so, the object has, to him, no greater significance than a pebble or a clod of dirt. He must be concerned about it beyond the recognition of its artificial origin, but unless caution now steps in, he may wander anywhere but in the right direction. It is nearer to certainty than merely probable that could some of the old-time Indians return, they would be astounded at the strange stories told of them and righteously indignant at the theories that have been propounded concerning their innocent selves. The archæologist is ever between the devil and the deep sea, fearing to suggest too much and equally afraid of asserting too little.

Unquestionably the Indians that held in possession the valley of the Delaware and all the land eastward, extending to the sea, and westward to the Alleghenies, were a people with a history when the portentous shadow of the European fell upon their homes. They had had a career, and now, the insidious white man among them, this was to close in sorrow, to the eternal shame of the intruder.

The question arises: Can this career be traced by a study of those imperishable relics, that, lying in and on the earth, are mute but none the less eloquent witnesses to man's existence here when the continent was unknown to the more advanced races of Europe? The date of man's appearance on this globe has not yet been determined, and if science is not wholly astray the fateful day of over-stepping the line dividing brute-hood from man-hood cannot be determined save in a vague, approximative way and equal uncertainty hovers over the continental divisions of the globe. When first in Asia, Africa or Europe, when first in the continental islands of the Pacific Ocean, is as undeterminable as when that day dawned and men stood upon an American shore, or, far less probably, ceased, somewhere on the continent to be

pithecoïdal with anthropoid tendencies and became anthropoid with pithecoïdal tendencies, which, by the way, he has never lost. That mankind originated in America has been seriously considered and the question ingeniously if not very convincingly argued, but what we know of the history of the world as a whole, tends to combat this view. Whether man originated at some one or at several centres is another mooted point. My own belief is that evolution at more than one locality and the most marked races, four at least, now existing are, as we ordinarily understand consanguinity, unrelated. That is, relationship reaches farther back than the date of the acquisition of manhood, and here we rest.

My concern, in this brochure, is with man in North America, and in one very little corner of it, at that, and not with the suggestive ape-like creatures of tertiary time. Their bones are not crumbling in American soil, it is safe to say, or some examples thereof would be resting, ere this, in the depressing atmosphere that envelops a museum shelf. In brief, we cannot leap into the dark and landing on a firm footing, travel over the route that America's aborigine took when he commenced his long upward and onward progress. It is left to the archæologist to reverse the direction and taking up, as he may, in their order, the long line of misty and musty yesterdays, see how far he can go on this ghoul-like journey. It is his cheerful pastime to play with dead men's bones and ponder over whatsoever these bones, when clothed in quick flesh, left behind them. Success may attend, but no great measure of it has been accorded any one individual. The result of archæological labor, to date, is gratifying save in this, there is more that we would like to know than there is confidently held that we do know.

Snakes do not charm birds nor does any species swallow its young, of that we may be positive, but antiquity never fails to charm mankind and all too often steals away his

judgment. Did, however, we know that every vestige of these one-time people was a product of their skill just prior to the advent of their irresistible enemy, the European, interest would soon flag when looking over an array of pots and kettles, implements of agriculture or weapons of war and of the chase. One object of its kind would be too like another, and our imperious appetite for novelty would not be appeased. Not so, as matters are. No two objects are alike except in a general and really unimportant way, but what is of paramount importance is that as relics are gathered, whether a single object or a significantly associated series of different objects, such finds, however frequent, do not give us the same impression. History does not repeat itself in this instance. An arrow point in one field may stand for nothing but itself, while in another field the like object may be meaningful beyond our grasp at a moment's notice. We are reminded, in the latter case, that it is the surroundings as well as the object that have meaning, and unless they are fully considered before the object is removed, the fact that is of value beyond any number of objects vanishes forever.

That all objects should be practically of the same age is, of course, absurd, but how much older are the first objects made on the spot than those made near the day of the Indian's departure? It is a question that cannot be answered in an off-hand manner. To do so has been the fashion of those associated with one archæological institution, and a tendency thereto has not been lacking in other directions. It is simply avoiding the main feature of interest centering in American archæology, and reduces the subject to the commonplace level of historical research.

That the relics of a defined locality, such as this of the Delaware valley, carefully, and, as near as possible, exhaustively gathered, do show a suggestive interval that

comes within the scope of antiquity is my own impression, and to demonstrate the probability, if not certainty of this, is my present purpose. In brief, when did the Indian come to the Delaware valley; how many centuries elapsed before he was driven out of it? Did palæolithic man of the glacial age and his descendants, "argillite" man, die out and so leave the country uninhabited until the pottery-making, flint-chipping Indian came upon the scene? Was there, instead, a continuous occupation from the Ice Age to the arrival of Europeans in the sixteenth century or earlier? When an Indian relic is exhibited at a gathering of scientific folk or attention is called thereto, where more fortunate people are together, there are always endless questions asked, but very rarely is there an intelligent reply. No one seems willing to commit himself to an opinion and rarely indeed does a professional archæologist, dealing with matters American, have the courage of his convictions.

In the "Handbook of American Indians," Part I (Washington, D. C.), p. 61, we find the following: "From the Glacial gravels proper there has been recovered a single object to which weight as evidence of human presence during their accumulation is attached; this is a tubular bone, regarded as a part of a human femur and said to show glacial striæ and traces of human workmanship, found at a depth of twenty-one feet. On this object the claim for the Glacial antiquity of man in the Delaware valley and on the Atlantic slope practically rests." This fanfaronade by W. H. H. is about as near a fair statement as we might expect. Bracketed as having discussed this find are the names Putnam, Mercer and Holmes, not one of whom could have given the subject exhaustive study, and significantly, all three uncompromising opponents of the view of antiquity.

Mr. Holmes rejects all other asserted evidence from the same locality. If we "regard" the bone as human—there is

really no doubt of it—the probability that the man who once had exclusive possession thereof was a creature of what we know as material wants. The vegetable world did not supply them all, and so weapons of some sort were necessary to subdue the animal world. It is of some significance, I claim, that more than twenty years before this fragment of a femur was found by Mr. Volk, the writer had found a considerable number of artificially shaped stones, and mostly so shaped as to be of use in capturing such animals as dwelt in and about the icy waters that were laying down, in times of flood, the gravel wherein this ancient fragment of a femur was found.

Wholly ignored by Mr. Holmes, but elaborately discussed by competent craniologists, is the human skull that was taken many years ago from practically the same gravel deposit as the femur, and about one mile northwestward or up the river from it. Its history shows conclusively that it was, when found, a constituent part of the gravel deposit. There is no possibility of its having been an intrusive object, nor that the gravel had been disturbed by any freshet or flood of comparatively recent time.

The first appreciative notice of this skull is by Dr. Frank Russell, in the *American Naturalist*, Vol. XXXIII, No. 386, February, 1899, p. 143. The author discusses the human remains purporting to have been obtained, to date, from gravel deposits, and, therefore, assumed by the discoverers thereof, to be of greater age than any surface-found remains or relics. Dr. Russell considers the skull from the cranio-logical standpoint only, and concludes: "From the evidence supplied by the Trenton skulls themselves the conclusion is inevitable that they are of modern Indians, probably of the Lenni Lenâpé."

Before considering some of the author's arguments in favor of this particular skull's modernity, let the question of

the value of position as indicative of antiquity be taken up. This Trenton skull was found at a depth of twelve feet in distinctly gradually deposited gravel, if one may judge from the character of gravel exposures made within a short distance from it, cellar and sewer excavations. The stratification is not, so far as observed, pronounced, but there are strata or seams of sand, not strictly horizontal that suggest alternate periods of torrential flow and comparative quiescence. The mass as a whole is very compact and boulders of large size are everywhere scattered through it.

It is evident, of course, that if an object is of positively known origin, its age is fixed by that fact, and the depth at which it may occur when an excavation is made is of no significance. It is necessarily an intrusive object. Brickbats from the bottom of a well sunk in Columbia gravel are post-Indian in spite of strenuously asserted position when discovered; but this rule applied by Dr. Russell to crania will hardly hold good, for if the femur found by Mr. Volk is human, doubtless the individual it suggests was the possessor of a skull, and human skulls may be very old and yet very modern in contour. Now, this Trenton cranium is not of usual shape and simply because it comes within the range of possibilities among Lenni Lenâpé crania, does not prove that it is one. It varies to a marked degree from the ordinary skull as found in Indian graves, and these vary among themselves to a considerable degree. The principal point is, does not the fact of its position when discovered set aside all probability of its being an intrusive object? A cranium, however thick, and this one is abnormally so, would inevitably be crushed beyond recognition if transported by a flow of water of sufficient force to carry with it such material as that with which it was surrounded, *i. e.*, if water alone was the transporting agency. Dr. Russell expresses the opinion that a short journey of this kind was practicable, consider-

ing the specimen's structural strength. I do not. But it is very supposable that the specimen was frozen in a mass of mud and sand, and this congealed mass carried as the accompanying gravel was might travel a long distance and meet with no accident.

As received by the gentleman from whom I obtained it, it was partly filled by sand and a slight admixture of clay that ensured cementation of the mass. This suggests that it was an old, fragmentary skull prior to its journey to the gravel deposit in South Warren street, Trenton, where it again came to light.

Again, Dr. Russell is wholly at sea concerning the physical geography of the region, and I am sorry to admit largely because of the obscurity of a communication of mine to him. He remarks: "Though the surface of the ground where the skull was found is twenty feet—it is thirty feet—above the ordinary level of the Delaware, the locality has been overflowed in recent years, so that existing agencies could have swept skull and gravel into place and buried them beneath strata of sand and gravels and huge ice-rafted boulders. The length of time that has elapsed since the skull was deposited in the gravels is probably very great, though of course it is not geologically ancient." A most unwarranted conclusion and gratuitous assumption. As a matter of fact, while the area where the skull was found is within the present flood-plain limit of the river, there is no evidence that any flood in hundreds of years has done more than wash the surface for a few hours, as I have once known it to do during the damming of the river temporarily by choking with ice the present channel of the stream. The present surface of the ground was covered with water, but not a trace of earth-removal was discernible when the waters retired. No flood is on record, covering this area, that had power to transmit coarse gravel or even fill slight hollows with fine sand. The day of such

floods was not so decidedly post-glacial that it comes within the historic period or the indefinite pre-historic period when man was unquestionably a dweller by the river's side. This skull, be it remembered, was over-laid by twelve feet of coarse material, and the floods that transported this gravel and "ice-rafted boulders" were those when there was occasional re-occurrence of torrential floods that only characterize the glacial period in the days of its activity. All possibility of recent, *i. e.*, historic rather than glacial transportation and re-deposition is absolutely out of the question, considering the physical conditions that now obtain. If right in this, then the skull in question is of geological significance rather than historic, despite its craniological conformation.

Again, the old bed of the Assunpink creek, to which I referred in my communication to Dr. Russell, and upon which he builds with much confidence, his conclusion, was a bed of the stream at the *initium* of its career as a water course, when no longer a part of that greater stream which made what is now New Jersey, southeast of it, an island. This was obliterated during the closing centuries of the glacial period, when a slight elevation brought about the present Atlantic ocean and Delaware valley water-sheds. The ancient creek was a result of such vast but gradual change and the channel of the creek at present was formed and the older one gradually obliterated so long ago, that to date the deposition of the skull in question back to the existence of the creek's earlier or initial channel is to ascribe to it an antiquity that is more than vaguely pre-historic. It carries it to a past so distant that it concerns the geologist fully as much as the archæologist.

Dr. Ales Hrdlicka, in the Bulletin of the American Museum of Natural History, Vol. XVI, Article III, pp. 23-62, New York, February 6, 1902, has given this same

skull most scholarly consideration. He says of it: "To diagnose the exact ethnic character of this specimen is a problem full of difficulties. * * * the skull can hardly be considered a normal one. * * * All that may be said positively is that in its general form, as well as in its main measurements and indices (*q. v.*), the * * * skull approaches much more the crania of the Lenâpé than it does those from Burlington county and Riverview cemetery; in fact it has nothing in common with these latter. * * * It seems to me equally impossible to positively declare that the skull either is or is not a Lenâpé skull." It may be grossly presumptive for me to comment upon the decision of such an authority, but I cannot withhold my conviction that the position of the skull when found goes a long way toward demonstrating that it is not the cranium of a Delaware Indian of distinctively post-glacial time.

Dr. Hrdlicka's most recent utterance with reference to the other supposedly ancient skulls refers them to the people of the northwestern coast of Germany and Holland. There is a certain degree of pertinence in this suggestion, as New Jersey had Swedes and Dutch settlers within its boundaries, prior to the English. Skulls, not Indian, but old in a historic sense, are not unlikely to occur, and even dissociated crania, for more than one Swede and Dutchman was captured by the Indians and murdered, possibly eaten, and so isolated skulls of such captives can be explained; but all this, not only possible but probable, does not affect the cranium found in deep gravel, which is not a normal "Indian" skull. No reference to European settlers can explain its occurrence, and while one swallow does not make a summer, one such find as this cranium does establish man's antiquity in the Delaware valley. If not, archæology is a sham and not science.

It has never been made quite apparent why a change in cranial characteristics should take place, because of change

of conditions. If the first human beings in the valley of the Delaware were the ancestors of the "Indians" later in possession, would not the shaped head that stood them well in the days of glacial stress, have met their requirements when more genial conditions obtained? The present Eskimos are neither fools nor idiots nor ape-like, and their experiences are what confronted man in the ancient days of the Delaware valley. It would be fortunate indeed if some now living had as level heads as had their forbears.

Another year a-field since my previous "Archæologia" was published has resulted in the collection of much interesting and suggestive material, and has resulted also in many a conclusion being reached bearing upon the archæological significance of the collection formed the past year, as a whole. Some of these conclusions have been touched upon in my earlier report, and, as they seem, to my mind, to be worthy of more extended notice, I have prepared the following pages, and grateful acknowledgment is here made to M. Taylor Pyne, Esq., of Princeton, N. J., for the encouraging interest he has taken in my labors and the pecuniary assistance so cheerfully given, which has made the publication of this report possible.

C. C. A.

THREE BEECHES, Trenton, N. J., Jan. 4, 1907.

ARCHÆOLOGIA
NOVA
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II

A STUDY OF ARROW-POINTS.

WHEREVER traces of the Indian occur the chances are that the first intimation of their presence will be the finding of an arrow-point. Other objects of aboriginal handiwork may be overlooked, and some primitive forms not recognized as other than products of natural forces, but the arrow-point never fails to catch the eye. It is something so radically different from all of the quaint shapes that pebbles acquire from exposure to moving sand and water, or even exposure to frost and heat, that curiosity is excited, and the discovered specimen is picked up and admired. Unfortunately too often there it ends. It is recognized as the armature of an arrow, but the imagination is not allowed legitimate exercise, and the one-time arrow, bow, hunter and game pursued are given no thought. "The hunter and the deer a shade" these many, many years, but they are none the less real if the story told by the arrow-point falls upon willing ears. This trifling bit of quartz or jasper, deftly shaped, stands for far more than evidence of the arrow-maker's skill in flint-chipping art. It epitomizes, perhaps, the most prominent feature of the life lived by the savage native race of America. Much else they had, and in abundance. Varied their tools, weapons and implements of chase and warfare, but their main dependence in securing the flesh and skins of animals for food and clothing was the bow and arrow.

Thoreau has most truthfully said that the blueberry of the back country hills never reaches Boston. The bloom, the freshness, the flavor, are dissipated by the required

handling and transportation. Unquestionable, also, is it that the true arrow-point never reaches the museum. Then it more truly goes to its grave than it did when shot from the bow for the last time, and found a resting place where the collector has chanced to find it. Here not all life has fled when but a point, the shaft, bow and bowman vanished. Very much the same is the fate of many a discovery in the field that is of real importance. It produces nervous prostration at the museum. It has no place in the dreary lists of specimens received, and disturbs the placidity of somnolent annual reports.

The evolution of the spear, and later of the bow and arrow, is a tempting subject for speculative archæology, and in that misty realm of the vague it must remain. It may be stated, without qualification, that the relics of the Indian, so far as yet discovered in the valley of the Delaware river, do not show the slightest evidence of a stone chip attached to a short handle such as have been found in southern California,¹ developing into a carefully-shaped point attached to a slender shaft. There are tens of thousands of very rudely-fashioned points, and with them are equal thousands of most artistically-chipped ones, but, inasmuch as the rudest are equally effective as points, we can surely wonder why so much labor was expended on such an object, when there was but small chance of recovering the arrow, uninjured, once it was shot at any animal. Nor is this all. The simplest shape, the triangular, is the most effectively penetrative, and shaped with least labor, and yet this form is not more abundant than many others that seem to be handicapped with many disadvantages of shape.

¹Abbott: Archæology of Southern California: U. S. Geographical Surveys West of 100th Meridian, vol. vii, p. 59, plate iv.

The puzzling feature of any considerable collection of these objects is that of size. How large were arrow-points made, and when does the same pattern become a knife or a spear-head? It is hopeless to endeavor reaching to a conclusion. The fact of variation in size and pattern is before you, but mocks at any attempt at an explanation. It can hardly be

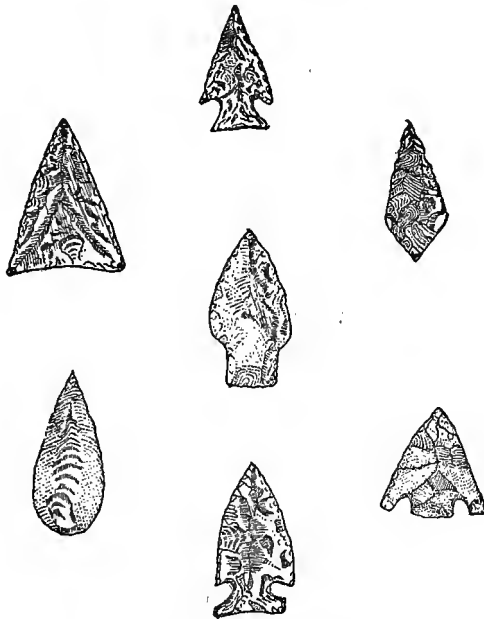


Fig. 1. Arrow-points used by historic Indians prior to introduction of fire-arms. Jasper, agate and quartz, and still showing the outline of each flake detached in the making. ($\frac{1}{2}$)

said that this variation of pattern has no meaning. It looks toward a variety of purposes, but what they were, if they ever existed, no eye-witness has recorded. If the fabrication of arrow-points was the life-work of professional chippers, then there must have been a demand for the serrated, edged, twisted, the barbed and leaf-shaped points,

or they would not have been made, yet not one but is less desirable than a plain triangular one. The fact that such variety exists seems to me to be evidence that there were professional chippers of flint, rather than every hunter or warrior provided himself as need demanded. Peter Kalm states:¹ "At the end of their *arrows* they fastened narrow angulated pieces of stone; they made use of them, having no iron to make them sharp again, or a wood of sufficient hardness; these points were commonly flints or quartzes, but sometimes likewise another kind of stone. Some employed the bones of animals, or the claws of birds and beasts. Some of these ancient harpoons² are very blunt, and it seems that the Indians might kill birds and small quadrupeds with them; but whether they could enter deep into the body of a great beast or of a man, by the velocity which they got from the bow, I cannot ascertain, yet some have been found very sharp and well made."

Kalm wrote the above at Raccoon (now Swedesboro, Gloucester county, N. J.), in 1748, so that he only records what he was told by the old Swedes then living there, and adds the result of study of what even then were relics of a departed race. He prefaces his paragraphs concerning these with "having had an opportunity of seeing, and partly collecting a great many of the ancient *Indian* tools, I shall here describe them." His conclusions are, I think, not all warranted. He certainly underrates the penetrative power of an unarmed but pointed arrow, and surely one made of hickory, if not blunt, can be made readily to penetrate to a fatal depth any bird or beast that the Indian encountered. That hickory, when well seasoned, is very hard all know,

¹Travels into North America, London, 1771, vol. ii, p. 39.

² There is no reason to suppose that Kalm here refers to "harpoons" such as the Eskimo uses, but to arrows. The translator is at fault here, as he is responsible for many obscurities.

and they had means of sharpening it, for Kalm states at the very outset of his description of "Indian tools": "Instead of *knives* they were satisfied with little sharp pieces of flint or quartz, or else some other hard kind of a stone, or with a sharp shell, or with a piece of a bone which they had sharpened." The value of the stone point lies largely in the fact that it was liable to be detached when the shaft was removed, and possibly it was the custom to poison it. An arrow-point much broader than the shaft would require proportionately greater force to enable it to penetrate to any distance. We know that bows, as made by the Indians, whether of hickory or ash, and stiffened by lashing another strip of wood to it where the strain is greatest, were equal to discharging arrows with tremendous force, and, as expert bowmen, arrow followed arrow with great rapidity. It was this more than the effect of a single well-aimed shaft that proved fatal to the deer and bear.

Kalm makes no reference to the art of chipping, or whether a few men supplied each considerable community. While the demand was so large, and percentage of loss so great, the use of these objects as arrow-points solely is probable, but there is warrant for asking if the examples of extreme elaboration may not have been designed for purposes wherein the probability of loss or injury did not occur. Fond as the Indian was of display, attracted as he was by gaudy color, and possessing as he did appreciation of the symmetrical, if not artistic, in any conception, it is not probable that such conditions influenced him to the extent of making arrow-points that had no advantage when used simply as the armature of arrow-shafts. But if these arrow-points had other uses than the name suggests, what were they? The question takes us from the facts of the field to the confines of the museum. There let the question rest.

It is by no means certain that the larger mammals were shot, and not trapped by pens and pitfalls. This is an inference, especially with reference to the latter, but, as pens or "pinfolds" were used in taking fish in the shallows of the river,¹ it is not unlikely that much the same method was used on land to entrap deer, the one animal upon which they most depended. The evidence of the use of pitfalls rest wholly, I think, on this suggestion being the correct explanation of numerous hollows or "dugouts" in the woods that attracted the notice of the earliest settlers when they came to clear the land. If the European's impression of the Indian be correct, that he shunned exertion whenever possible, then such a means of capturing bears, for instance, would appeal to him rather than to brave bruin in his den with a bow and arrows. In fact there was no animal that they could not trap more easily than capture by use of any weapon they had devised. If the mastodon still roamed in the Delaware valley it certainly was not troubled by hurtling arrows sticking in its ribs, notwithstanding the testimony of that mysterious Lenâpé stone now, fortunately for American archæology, relegated to the limbo of unsuccessful frauds. Evidence is still wanting to prove that the Delaware Indians had even a tradition of any such beast. A name for it would appear in their language had this been true.

To a greater extent than any other object of Indian handiwork, unless possibly the grooved stone axe be an exception, the arrow-point is most widely distributed, and here

¹"My cousin Revell and I, with some of my men, went last third month (May O. S.) into the river to catch herrings. * * * after the Indian fashion, made a round pinfold * * * we drove thousands before us * * * so many got into our trap as it would hold." Hist. Coll. New Jersey. Barber and Howe. 2nd Ed., 1856-7. Letter of Mahlon Stacy, written at Trenton, 1680.

let me speak of my own experience as a collector, offering it for the little it may be worth. I have gathered many thousands of Indians relics, and it is my impression that the singly-found arrow-point, picked up where relics in all their variety do not occur, is well-nigh invariably of simple pattern, and suitable for tipping the arrow-shaft, while the quaint forms, with their barbs, wide or wing-like extensions beyond the stem, and specimens so small and fragile that they were useless as shaft armature, are mostly, if not wholly, found on village sites, associated with pottery, charcoal, and the implements of every-day use. It may be mere coincidence, and of no significance, but, as this has been my own experience after thirty-five years of field work, I think it has a meaning. It seems to be true, too, of very old village sites, abandoned in pre-historic time, as well as of those of later date, when the objects of their own production were unwisely discarded for the flimsy gim-cracks wherewith the conscienceless European defrauded them.

Taking arrow-points as a guide, it is an irresistible impulse of the collector, if really a student of his subject, to determine if they suggest by their numbers, their variety of shapes, the conditions under which they occur, and the materials of which they are made, that antiquity the charm of which alone keeps alive the student's interest. I¹ have already expressed my views as to the suggestiveness of their numbers, and referred briefly to the other features of their occurrence, but additional details of the one of greatest importance, that of material used, are worthy of consideration.

Under the heading of "Antiquity," in Hodges' Handbook of American Indians, we find, in treating of the geological conditions at and near Trenton, N. J., the author of the

¹Archæologia Nova Cæsarea, i, p. 39, 1907.

article asserts that overcapping the Trenton gravel proper are "a few feet of superficial sands of uncertain age," and desires the reader to believe, judging from the general tone of the article, that they are not worthy of the archæologist's consideration; and again: "Beneath the soil, extending throughout the sand layers, stone implements and the refuse of implement-making occur; but the testimony of these finds can have little value in chronology, since the age of the deposits inclosing them remains in doubt." Let us endeavor to see what that little in chronology is really worth. The underlying gravel is admitted to be the product of floods, due to the melting of one-time glaciers in the upper valley of the river. This is plain enough to all except those to whom everywhere is nowhere, they see so little. In time came the cessation of floods equal to gravel transportation, but not an end, by any means, of sudden freshet and continuous flood that far exceeded the activity in this direction known to historic time, and it must be remembered that even rainfall alone, without any aid from melting snow, can raise the river, as it did in October, 1903, a third of the way to the level of the terrace level that is capped with this sand which has attracted so much attention. Whether we must consider, also, changes of level is not so much a matter of importance as might seem, for the sand tells its own story. The gravel beneath, when the last of it was laid down, was for an indefinite period the flood-plain of the ancient river, and the sand came from the same general up-river region and overspread this gravel gradually, probably with many interruptions, and so evidences of stratification are to be traced in many of the exposures. That it is such a water deposit there can be no question. It possesses not one feature that suggests any other origin. It is as free of food for theory and gives as little opportunity for geologists to speculate as the rocks to the north and clays and marlbeds to the south.

That when exposed to the sun and wind these sands should have been somewhat shifted to and fro, and irregularities of surface caused, is beyond a doubt, but renewal of overwashing floods obliterated much of this, and at last the terrace surface was as level as the proverbial plain, and it has maintained this for so many centuries that we should be a little cautious when glibly talking of the ever-shifting sands. In all probability these sands, when laid down, were never arid for any length of time. Vegetation was not too scanty to greatly aid in holding them intact, and there is no marked elevation of them anywhere in the entire area suggestive of a dune. Water action, then, explaining the deposit, we have necessarily to look backward to that time when such sand-bearing floods were possible, and certainly, considering that this plateau, once frequently overflowed, is now from fifty to sixty feet above the river. It is insisted that no other agency than flowing water could have formed the deposit. Torrential rainfall, washing higher ground, could not have done the work without traces of violent action and all absence of stratification; and such action, too, would have rolled down small boulders and some coarse gravel that would be in excess near the junction of the higher and lower ground, and such is not the case, but there are boulders in such frequency that their importance in the history of the deposit must not be overlooked. The suggestion that they belong to the underlying Trenton gravel, and that the sand has been washed from around them by rain and temporary rivulets caused thereby, will not hold. These boulders, varying from one to four and five cubic feet in bulk, prove to be lying *in* the sand, for sand is resting on the gravel underneath them, sometimes to a depth of five and six feet. As some have been exposed recently in cellar and other excavations, they have been carefully examined, and all possible evidence was obtained that they

were a constituent part of the sand deposit, and bore no relation to the underlying Trenton gravel.

How, then, came these surface boulders where they are? There is but one known agency to explain their presence,

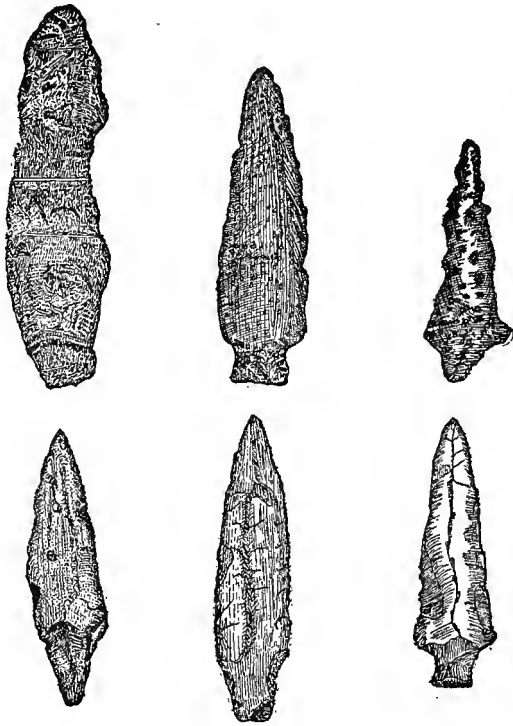


Fig. 2. Arrow-points and spear-heads found in underlying sands. Argillite and with outlines of chipping wholly or nearly obliterated. ($\frac{1}{2}$)

floating ice in which they were encased or upon which they were borne. They tell precisely the same story that do the great boulders, weighing tons, that are characteristic of the earlier gravels. I recently measured a mass of argillite near

Bristol, Pa., which contained not less than five hundred cubic feet of this rock, and boulders of half and quarter this size are of frequent occurrence. Given, then, a deposit with so clear a history, and traces of man therein, we have substantial evidence of lapse of time that has, perhaps, as Mr. Holmes has put it, but little value as chronology, but when estimated at its true worth is found to go so far back that the face of the region was not quite the same as now. This may not be of sufficient importance to figure in an essay on Antiquity of Man in the Delaware Valley, but satisfies the reasonable archæologist who is concerned alone with demonstrable fact.

Now what of these traces of man that occur in this sand? They have been sadly misunderstood, especially by those who accept their knowledge of such matters at second hand, but to those without prejudice or preconception, who have examined the locality, the truth was as plain as the sun at noon-day. They are objects, mostly of argillite, the archæological significance of which I have set forth in a previous publication.¹

This sand deposit occupies a position in the career of man in the Delaware valley that is distinctly post-palæolithic and pre-Indian. That the latter gradually merged into "Indian," *i. e.*, flint-chipping and pottery-making man, is, I think, demonstrable, but it has not yet been as satisfactorily determined that the true palæolithic horizon merged into that here called the pre-Indian.

It seems difficult to keep these three horizons distinct when contemplating the history of the river valley as a whole. A most amusing and yet unfortunate instance of this inadequate comprehension of the facts occurred at the meeting of the American Association for the Advancement

¹Archæologia Nova Cæsarea, p. 39 et seq., 1907.

of Science at Toronto, in 1897, when a professor of American Archæology, who has more than once visited the locality, and had had the truth drummed into him for years, exhibited flakes of argillite, refuse of an arrow-point maker's labors, gathered from these sands as evidences of Palæolithic Man. Little wonder some of those present ridiculed his contention. It was an inexcusable blunder. Absurdity could go no farther.

This subject is fittingly brought to notice here, because unquestionable arrow-points of argillite, very rude often, but unmistakable, occur in these sands. The bow appears to have been known to the man who dwelt on or near this flood-born plain. If not the armature of arrows, they were the heads of spears that, considering their size, must have been trifling weapons. Spear-head or arrow-point, it matters not; they are of artificial origin and as old as the deposit of sand containing them. Setting aside, therefore, all reference to genuinely palæolithic conditions, admit for argument's sake that no such conditions ever occurred in this river valley, we have in these sands, covering a comparatively small area, evidence that is irrefutable that man was here when the influence of the Glacial period was not a thing of the past; here at a time when the upper or non-tidal reach of the valley was forbidding, if not actually uninhabitable, unless upon the summits of the surrounding hills; at a time when man could from such elevation look down upon a river that was constantly a resistless torrent, vastly wider and deeper than at present, and which was wearing away the sides of the valley, eating into its scanty soil, and spreading it here, miles southward, where the flow was checked in its seaward course by meeting with the unyielding tides.

At such a time we must date the appearance of the first arrow-points, and their use and manufacture continued until

the arrival of the European, who, introducing fire-arms, caused the bow to be slowly but steadily laid aside or handed over to the children as a plaything. We know the latter date with sufficient certainty; we can assume the former date with some warrant for what we do. What of the interval? How many scores of centuries, who will dare assert?

THE INDIAN SPEAR.

It is in archæology as in some, if not all, branches of knowledge, that the simplest objects are not the most easily explained. The student is often left to find a solution for himself, for the obvious reason that the teacher is not equal to the occasion. Mere words go a long way towards dulling the senses, but by no means do they satisfy all the demands of the intellect.

The simplest form of a weapon is a stick. This, armed with a round or oval stone at one end, becomes the familiar club. Sharpen the stone to a point, and it becomes a spear. This is simplicity itself, but this very weapon, which we know was one of the possessions of the Indian, is a puzzle in some respects. It does not appear, from the white man's point of view, to have been an effective implement of either war or the chase.

It is difficult to conceive of man at so low a stage of intellectual development that he is not equal to this, and when equipped with a spear for his weapon, his wit should enable him to cope with his foremost and most exacting task, the capture of animals, and secondarily to defend himself against his human foes. So it is that we scarcely can think of a savage without his spear. To civilized man they appear necessarily inseparable, and it is little wonder that the artists who embellished the fascinating but unsatisfying pages of

the pioneer explorers of North America, should as prominently have depicted our Indians as spearmen as they did men with bows and arrows.

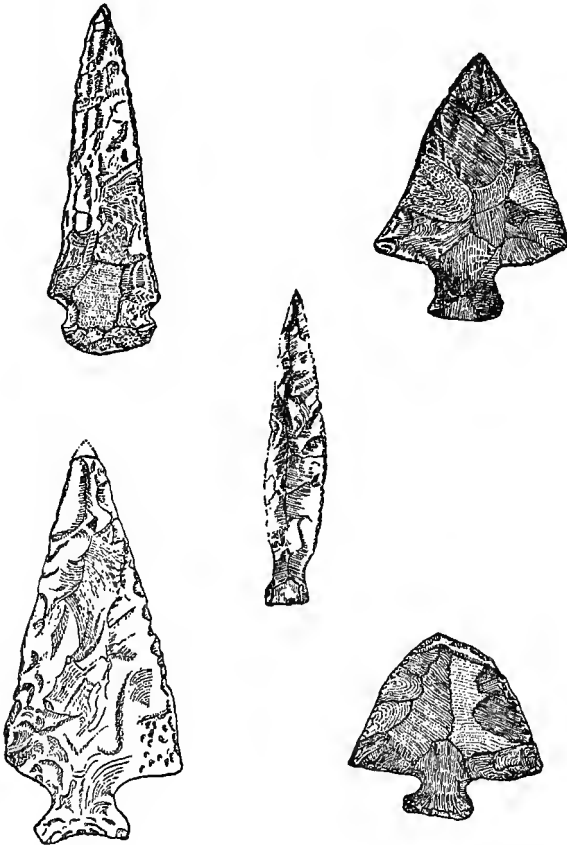


Fig. 3. Indian spear-heads of jasper. ($\frac{1}{2}$)

Treating of spear-heads found in the State of New York, Rev. W. M. Beauchamp¹ states that the Iroquois, according

¹Aboriginal Chipped Stone Implements of New York: Bulletin of the New York State Museum. Vol. iv, No. 16, p. 39. Albany, N. Y., 1897.

to their historian, L. H. Morgan, did not use the spear, while: "On the other hand, in his picture of Atotarho, David Cusick placed a spear in the hand of one of his messengers. Bruyas has allusions to spears in his early Mohawk lexicon, and their occasional use may be inferred from the *Jesuit relations*, but somewhat obscurely. The Iroquois sword, whatever that may have been, was often mentioned. Schoolcraft gives the word for spear in several Iroquois dialects, and Zeisberger uses for lance the name which appears in another lexicon, half a century earlier. One Virginia picture has Indians with fishing spears, but these are described as having wooden points, not metal or stone. A weapon so useful was not likely to be abandoned until a substitute was found, but it seems certain that the large stone spear-head was not generally in use here (*i. e.*, New York State) three hundred years ago. History and archæology agree in this."

"This is another of the curious proofs of a change in race and occupation. Iroquois and Algonquin alike seem to have known little of the higher stone art of their predecessors, and a weapon once everywhere abundant, had almost ceased to exist. A sweeping change had passed over the land, and the newcomers did not inherit the arts of the old. If they did not, how could they have been their descendants. Allowing for every resemblance, there is still a wide gulf between the Indian of our Northern and Eastern States, as first known to the whites, and those who preceded him. This difference can only be fully appreciated by those who have early sites of a known age to examine"

The spear-heads of the Delaware Indians tell no such story. They are, as has been stated, a puzzling feature, when relics of these people are considered in their variety and association. I call them "puzzles" from the fact that, so

far as I have been able to gather specimens, they are clumsy, exaggerated arrow-points, without the effectiveness of the latter. The largest, however sharp the extreme point may have been, are thick at the middle of the blade and without edges that are as sharp as the typical knife made of the same material, and however securely hafted, would need the power of a catapult, rather than the human arm, to inflict such a wound as would result from the thrust of a metal spear. Schoolcraft speaks of such large spears as "most efficacious in close encounters,"¹ but I think scarcely so unless pressed against a naked and non-resistant body. On the other hand, when stone spear-heads are long and slender, as many of them are, they were easily broken, and all things considered, were never as effective as a well-directed arrow. Indeed, an arrow of maximum size would make as ugly a wound and lead the way as effectually to the entrance of the shaft as would the spear. If, too, the spear is as desirable a weapon as it seems to be upon general principles, and as many savage peoples unquestionably find it, why among the later relics of the Delaware Indians, *i. e.*, relics made of jasper and quartz, do they occur so sparingly and bear so small a proportion to the entire bulk of chipped implements? Spear-heads proper or those that are at least four inches in length, of silicious material, are rare. They have not occurred in my experience as a collector more frequently than one to three or four thousands of arrow-points; perhaps not as often. It is true that a bow calls for any number of arrows. The bow would with care last well-nigh a lifetime, but arrows must be continually supplied, but a spear, escaping accident, would be a permanent possession, though it is difficult to imagine it as escaping destruction, especially if the head was long, thin and slender. If of copper, and copper spears have been found, it might

¹Schoolcraft: Hist. and Cond. of Indian Tribes. Pt. i, p. 87, pl. 26.

stand any stress put upon it, but not so if made of flint. Again, if apt to be lost or broken, and others promptly replaced it, then the spear-head, being in daily, common use, should be proportionately abundant among relics, but it is not. If we may judge from present conditions of village sites, its use was quite limited, and in the later centuries of the Indian's career may have been more of a ceremonial object than one of daily use. That the very last Indians in the Delaware valley knew the spear is shown by their language, as the words, Tangamican, Tangandikan, Hattápi, Pepachkhamátunk, indicate, each meaning a spear in general, while there was also Notamaeishican, signifying fish-spear; and again these terms for spear had no reference to arrows, which are but small spears. These were known as Alluns.

So far as I have been able to determine, by the exploration of village sites, I have found no trace of such conditions as Mr. Beauchamp describes as pre-Iroquois and Iroquois. The Delaware Indians, so far as we know or are likely to know, from the day of their establishment here at the head of tide-water—it was their headquarters and principal town—until their expulsion by the European, dwelt continuously, and the relics of their one-time occupation of the region points to no material change in their condition, nor are there sites at other points in the immediate valley or near it, east or west, that seem in any important degree older and exhibit a different condition as to habits and outfit. Mr. Beauchamp speaks of the predecessor of the Iroquois and Algonquin. The Delaware Indians are Algonquin, and were at one time the most important people among that stock or nation, but they had here in New Jersey no predecessors of equal or greater culture. They certainly succeeded to no superior tribe of flint-chipping Indian, as Mr. Beauchamp states was the case of the Iroquois. The stone implements of flint, or, more

correctly, of jasper and quartz, can be referred to no other people.

There is, however, a condition obtaining in the valley of the Delaware that possibly has a bearing on this subject of the use of spears. As I have persistently maintained, the use of argillite preceded that of jasper, and where the former occurred, almost if not quite exclusively, there is found a type of implement that is certainly spear-like in appearance, if never used as such a weapon. They are referred to also as knives, and not unfrequently, especially when the task of classification of specimens falls upon the curator, they are

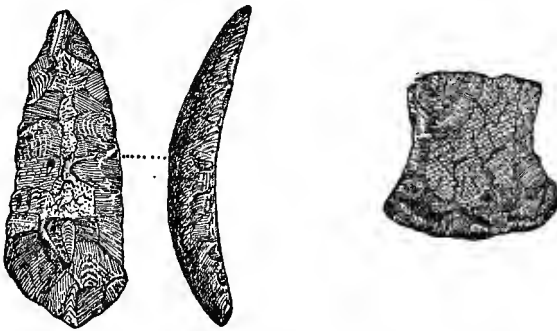


Fig. 4. Jasper scrapers. The purpose here is not problematical. ($\frac{1}{2}$)

duly catalogued simply as "implements." This is a highly appreciated term in museum circles. It covers a very large proportion of stone-age handiwork. It inspires confidence, too, in the mind of the curator. He feels safe from contradiction and enjoys a degree of confidence never otherwise experienced, particularly when he assures the uninstructed that "this is an implement."

True or not, when we gather these objects in the fields, picking one up here and there from the furrows of recently-ploughed ground, the impulse is to say, on the spur of the moment, "this is a spear-head," and on this basis, logical or

otherwise, it is safe to say that the ancient argillite-using man, be he true Indian, or his fore-runner and essentially distinct, was as much a spear-man as an archer. The bow, as I have stated when treating of the gravel-capping sand, must have been known at a very early period, but the spear was equally common, and I have wondered, at times, if it was not more so, and if the smaller specimens, or assumed arrow-points, might not have been used as small spear-heads. Archæologists are necessarily groping in the dark when treating of such a matter. The conditions obtaining among existent tribes, which may be using the same form of implement, is not necessarily a safe guide. The form of the so-called spear-head is so readily available for other than spearing purposes, that what was its use in one region is not necessarily that of another. Those among the earliest Europeans who left records of these people wrote only of what they saw or were told by a race not devoid of a sense of humor, and much might have been said as to their known past, which was far from true. Neither Hæckwelder, Zeisberger or Loskiel were archæologists, and the role of historian was assumed with too little sense of its importance. They wrote of the conditions as they appeared to them to be, but did not make sure that the apparent and the real were identical, and while the information they have left behind them is of great value, we cannot but deplore the opportunity wasted in their futile efforts to convert, which is always an unwarranted interference with nature's purposes, and wish they had spent their lives in practical investigation. Had this happened, this region, the metropolis of Lenâpéan activity, would not now be such a source of disputatious wrangling among American archæologists.

Another form of spear-like objects, made of argillite, and for which in 1881¹ I suggested the term "fish-spear," and re-

¹Primitive Industry, p. 273, fig. 253. Salem, Mass., 1881.

marked of them, "hundreds * * * have been collected from the alluvial deposits, through which various creeks have now worn their channels. In this alluvial mud, which has been for centuries and is still accumulating, many specimens of these argillite spear-points have been found at various depths, even to five feet, and nowhere do they occur in such abundance as *in* this deposit, which forms the tide-water meadows that skirt the banks of the Delaware from Trenton."



Fig. 5. Jasper "drill." This pattern of implement is scarcely adapted for other use than that indicated by the name adopted here. ($\frac{1}{2}$)

A lapse of twenty-six years and much extended observation now requires of me to recall the above, as to the distribution of this marked form of implement. They are found throughout the entire area of South Jersey, or that part of the State which was not affected by glacial conditions beyond receiving floods of icy waters and in the river's immediate valley floods of ice. This is more than half the whole State, and was everywhere occupied by a comparatively fixed population. The historic Indians had a name for every stream and a village somewhere on its banks. The traces thereof are unmistakable, but all over this territory, up-hill and down-dale alike, and often far from any water where fish are found, these fish-spears are to be gathered in considerable numbers. I hold to the name. Considering their shape and their unquestioned adaptability to spearing fish, from our point of view, and the fact that so many have

been gathered from the shores of considerable streams where fish are still abundant and where village sites give evidence of a fauna more suggestive of a food-supply than do the streams at present. The Indian knew no game-laws, it is certain, and often indulged in "wholesale slaughter," as we would call it, but still there is no evidence that common sense was not exercised, as a rule, and no species of fish was ever exterminated by them. Then the name, *Notamæishican* is to be kept in mind. The Indian used some sort of a spear, and this pattern is most likely to be the one in question. They are essentially an argillite implement, and many of them are very old, and some are so decayed that only the practiced eye would recognize their artificial origin. The same form in jasper rarely occurs, and I have never seen it in quartz. How rapidly argillite disintegrates is an open question. Break one of these old and crumbling spears in half and a core will be found that is of almost flinty hardness, and readily scratches glass. The softer coating of semi-decomposed stone seems to be a pretty permanent protective coat to the core, and in such state the implement is insured a fairly protracted continuance; but change gradually does go on, for some specimens have been found that barely retained their shape and suffered from even careful handling. May we not infer from these conditions that thousands of these spears have long since crumbled into dust? It is surely a warrantable assumption that abundant as are these objects still, they represent in but meagre fashion what has been. Much concerning their significance that applies to ancient argillite implements of a far ruder pattern, *i. e.*, the palæolithic type, applies to these assumed fish-spears.

They are now found upon the surface. Every rain washes the sand from many a score and then they are covered again when the wind shifts these same sands when dry. How so

fragile an object has so generally escaped destruction, excites surprise. Neither the tread of the horse or the ruthless plowshare seems to do more than push them aside. Their number is incredible in some localities. In the valley of one small stream, where the sand is deep and has not been materially disturbed, except by Nature's own forces, I have known more than one hundred to be found during a few hours' search, and one marked feature of the condition of discovery was, that often a dozen or more would be found in contact, indicating that they had been buried or left on the surface, and gradually the sand heaped over them. Certainly such is the case of a cache of fifty or a hundred or more, and such deposits have been frequently unearthed.

Hundreds are found upon the surface, associated with unquestionable relics of the Indians, and so why not class them as such? By most archæologists this is done; perhaps by everybody but myself; but I hesitate to consider them as only a common form of Delaware Indians' handiwork down to historic time for more than one reason. That these Indians made and used them is not questioned, but there is not a particle of evidence that they were in *common* use to the very last, as colossal ignorance has confidently declared. There is surely significance in the fact that they are a characteristic form of the deep sand deposits, and are found at the very base, often, of ancient sand-dunes, far from the surface and where never a trace of jasper, quartz or pottery occurs. If these sand hills are recent and all the argillite fish-spears made by the historic Indian or his grandfather, as has been claimed, then why has not all the handiwork of these people been inhumed? It is precisely the same condition as that pointed out by me years ago of the assumed palæolithic implements of the Trenton gravel. They have been called "intrusive objects" and "unfinished implements" and "rejects," and endless plausible and un-

plausible suggestions made by those whose only aim is to modernize every trace of early man, ignore facts when possible and distort others when the attempt is not too glaring. Pottery, however, decides the matter. It never occurs in the gravel and if not, why not, if the palæolithic implement is an intrusive Indian object. Nature never did and never would take the trouble to discriminate. When she disturbs the surface every object upon it is treated alike. There is no selection and never yet has a stone axe, polished celt, jasper arrow-point or pottery been found *in situ* in a gravel deposit. What has been found is what might be expected, the rudely-chipped pebble that marks the beginning of artifacts.

Was the condition of significantly deep inhumation of one form of object with absence of Indian handiwork found upon the surface peculiar to a very limited locality, there might be some explanation that would fit the case and no other origin than that of the historic Indian be indicated, but this is not true. These fish-spears, or whatever they may be, so strongly suggest throughout so wide a territory that they are old, to a great extent ante-date the general use of the jasper, that I am still convinced that my view, as expressed in 1881, is substantially correct.

When the bow was invented, it evidently soon followed that the arrow was made more effective by arming its point, though this really would have been unnecessary if hard wood had been used, but bow and arrow, spear and spear-head alike had a beginning, a primitive form of which it may be truthfully said, "lost is lost, and gone is gone forever." Certainly the primitive arrow-point is beyond recognition. That a splinter of rock with an acute point and cutting edge should attract attention and suggest value as an addition to an arrow is quite in the course of natural events, once the bow was invented, or if, as has been claimed, the spear

preceded the bow, then the armed arrow is but a smaller form of that weapon, differently projected. Here we are groping hopelessly in the dark. The initial form of fabricated arrow-point is unknown. Naturally, splinters of stone of available shape and size, of accidental origin, would not supply the demand, and the art of flint-chipping was cultivated. This established, the design of the point was a matter of chance quite as likely as that the various shapes had each its own purpose, except perhaps the most elaborated and bizarre forms.

Whatever the age and origin of arrow-point making, and however uncertain the student may feel in dealing with the problem, this at least is not open to discussion, the art as practiced here at the "ffalles of the Delaware," the head of tide-water, the meeting-place of conditions that are infinitely varied, where the hills cease and the plains commence, a once beautiful spot, now nearly covered by a hideous city, here reached its highest development and flint work that commands the admiration of all who appreciate the outcome of skill, is still to be found in this one time favorite dwelling-place of early man.

At least one "king" of the Lenni Lenâpé lived within a few rods of where I am now at work. As seen from his wigwam, he had a varied landscape before him. Forests fended off the chill north winds and a wooded flood-plain of the river, seventy feet below, stretched far away to the south. Hereabout every industry known to homekeeping Indians was pursued, and here, even to this day, traces of all such industries are still found. As potters, as implement makers, as designers of amulets and ceremonial objects, and carvers in stone of curious pipes, as cultivators of the soil, they were eminently successful, and this, so confidently stated, is all shown by the excellence and abundance of their

handiwork. One old king, at least, had the very best that was to be had, about him.

Gathering here and there some trace of this ancient folk, a potsherd, an axe, an amulet, or the far more common arrow-point, it is well to let the object lead you back to forgotten centuries, as it will, if you so desire. The mind is more easily influenced than we suspect, and with an Indian relic in hand, we can see, in a sense, the man who made it, and not only him, but his associates, and the ploughed field becomes again a village site. Unless we do this, the real purpose of exploration is wanting, and the gathering of specimens becomes as monotonous and meaningless as dry-as-dust statistics. The head of a spear, the point of an arrow, unless the one-time owner thereof is pictured to the mind, are, alike, nothing. And be it remembered, he whose vision is thus penetrative and constructive, is not necessarily a visionary.

THE ANCIENT QUARRYMAN.

The doctrine of resemblances, which is scarcely worthy of the name "doctrine," and cannot be elevated to the plane of a scientific theory, seems to have been the actuating motive in the preparation of Mr. Mercer's¹ report on the antiquity of man in the Delaware valley. Wholly opposed to the view of any evidences of antiquity being derived from the products of aboriginal skill and that tradition and folklore must be given respectful consideration, Mr. Mercer pounces with great glee upon what may possibly combat if not annihilate the view of antiquity, and overlooks the main

¹The Antiquity of Man in the Delaware Valley. I. Introduction. II. Ancient Argillite Quarry and Blade Workshop on the Delaware River. By Henry C. Mercer. Publications of the University of Pennsylvania, vol. vi, p. 85. Illustrated. Ginn & Co., Boston, Mass., 1897.

features of the ground he explores, which are all important in determining the archæological significance of the locality. The student is under obligations to the author of the report under consideration for its valuable details. They give a lucid and correct idea of the physical conditions as he unearthed them, but as to his conclusions, that is wholly a different matter.

As so often happens, the broad distinction between assumption and fact is overlooked and many a conclusion is based on the former and yet set forth with all the confidence of results that rest undeniably upon the latter. The assumption is invaluable in archæological research. There are too few facts to work with, and reasonably assuming this and that, the worker in the field can progress satisfactorily and comes at last either to demonstrate that his assumption is unwarranted or that it is not an assumption at all, but a fact. The all-important point is to keep the two separate and be quick to discard the assumption when it proves to be valueless. Too many archæologists are strangely loath to part with a pet theory. It is hard, and often means that the labor of a life-time has been in vain. Preconceived ideas, if dominant, renders all field-work useless, except perhaps the dreary details of mechanical work and description of the specimens collected, and preconception, it appears to me, vitiates this brochure of Mr. Mercer's on Delaware valley archæology. The author's antipathy towards the idea of a really ancient man in the region treated is pronounced. All that savors of a lapse of years is as a red rag to a bull.

By the doctrine of resemblances, as I have called it, Mr. Mercer is inclined to accept the conclusion that because he has found vast quantities of rude argillite implements at the spot where the material was quarried, and that they have the same general appearance as those found on the surface of the elevated plateau of central South Jersey, and

also occur in the gravels of the immediate valley of the river, that the two are identical in age, origin and all archæological significance, or, as Mr. Mercer puts it, "historical" significance. His contention appears to be, for there are no distinctly positive assertions, that man carried these rude objects from Point Pleasant on the Delaware, in Bucks county, Pennsylvania, to Cape May, in New Jersey, and that that man was the Indian, or his great-grandfather, with whom William Penn bargained for the pick of his land. The doctrine of resemblances is called upon to prove this, and apparently does so to his satisfaction; but is it a logical conclusion? Here at Point Pleasant argillite "blades" were made; ergo, all blades wherever found come from Point Pleasant. *Post hoc ergo propter hoc*. Whatever such line of reasoning may be, it is not archæology.

In the first place, the resemblance is fortuitous. In the second place, unfinished objects would obviously be the same wherever found, though they were made, the one centuries before the other and by people wholly unrelated, and lastly, when there was active exploitation of argillite quarrying and implement fabrication at Point Pleasant and that general neighborhood, if Mr. Mercer is correct in his inference that it was as recent as five centuries ago, the Indian of the tide-water region was using jasper in preference to argillite and had been using it for a long time. As already pointed out,¹ the dwellers in the tidal region were not dependent on quarries of any sort for a supply of any material for making implements, and that, too, of the very first quality. Masses of argillite sufficient to meet all their needs were near at hand and altogether accessible. One such mass that I have recently seen uncovered—it was within three feet of the present surface of the field—would have made, if worked up, fully one hundred thousand flat

¹ Archæologia Nova Cæsarea, p. 35. 1907.

"blades," such as are so common everywhere in South Jersey; blades two inches in width and from five to seven inches long. Again, who among archaeologists or more fortunate folk has demonstrated that these blades were made by the historic Indian. The word "argillite," or any term of same purport, does not occur in any publication concerning the Indians, printed in the seventeenth or eighteenth century. No difference was detected between one arrow-point and another; with the early explorers and missionaries, every object not made by themselves, was made by an "Indian;" but this does not go to prove that prior to the Indian whom they knew there might not have been another people. No one is rash enough to declare in *ex cathedra* manner that there were such, but the author of these pages, for one, does dare to claim there is evidence of man's presence in South Jersey, which is more reasonably explained on such an hypothesis than upon any inference, deduction or assumption offered by Mr. Mercer. I have seen one cache of argillite "blades"—not a truly descriptive name, if cutting is implied—numbering two hundred specimens, not one of which showed the slightest trace of having ever been used in any way.¹ To what purpose they were put, if any, is purely conjectural. They might have been used as hoe-blades, for instance, but if so used there should be signs of attrition, especially when digging in the sharp, sandy soil of South Jersey. This I have never seen. After examining many hundreds of specimens, now in the Abbott collection of the Peabody Museum, Harvard University, and in collections made by others, it is the same story, no nicking of the edges, no striæ, no polishing, but the object as it came from the hand of the maker, plus the ravages of time; simply chipped thin blades

¹ See article "Cache discs and blades." Handbook of American Indians, p. 178. Washington, D. C., 1907.

that had suffered only as all implements of argillite suffer from long exposure. Why they should be referred to the argillite in place and not to boulders of this mineral near at hand, does not appear. It is true discs of jasper are also found cached, and in one instance both it and argillite were associated in a cache of over two hundred objects, but the jasper was ninety-five per cent. of the whole and the argillite objects were not weathered but black, and the chipping as fresh as when done, which bore out that for which I have always contended, that argillite never ceased to be used, but its place was gradually taken by silicious material.

It is by no means certain that the characteristic product of Gaddis Run, near Point Pleasant, was not a finished artifact and not intended for "crude material" for more specialized fabrications. It must be remembered that they are not adapted to re-chipping until a thin, flat blade is produced, and not, too, of much smaller size. These roughly-chipped but finished (?) objects are noticeable as being shaped by detachment of very large flakes, and the specimen has a wavy shape that could not be removed by any amount of "trimming." A second consideration is, that the argillite at Gaddis Run, as microscopic and chemical examination shows, is not identical with more than fifty per cent. of the argillite relics found in the tidal area of the river valley; and untrimmed implements, if such they were, unquestionably from Gaddis Run, are found scattered over the fields, miles away from that locality. They occur singly, and never yet as a cache, ready for the workman to convert them into more available shapes. As they bear not the slightest resemblance to objects of same material found in the gravel, but have been found deeply buried in the soil and wholly unassociated with Indian handiwork, it is evident that while not old in a strictly geological sense, they are not as "new"

as the historic Indian. There is nothing to indicate the precise or approximate age of the quarry at Gaddis Run, and the discovery of the product thereof in the tidal limits of the river valley under circumstances indicative of pre-jasper and pre-pottery age, makes it reasonable to conclude that the quarry is as old as the day of exclusively argillite products and synchronous with the sands that overlie the gravel and on which the "Indian" soil now rests.

The exploration of the Point Pleasant neighborhood revealed the fact, known to everybody long years before, that blocks of argillite, wrought to their present shape and now known by the rather unfortunate name of "turtle backs," as it is not descriptive of all the specimens that are classed together as "rude" or "unfinished," and this was the sole source of supply of argillite. Here, again, we think Mr. Mercer's view is incorrect. If comparatively recent floods have carried these much—and unnecessarily—discussed objects down the river for a distance of some twenty miles, why should they not show signs of the rough and tumble treatment to which they would necessarily be subjected? Those found in the talus along the river shore do not show anything of the kind. Water-worn "palæolithic" implements from the gravelly bed of the river are occasionally found. The former are from the gravel bluff, of which they are a constituent part and have been exposed to little or no water-action, while the latter, from the bed of the river, have been so exposed. It is not clear how the one set or evident that the other were chipped miles from where they are now found, by Indians of three or four centuries ago. The truth is, and it can never be too frequently or emphatically declared, that the two regions, tidal and non-tidal, are in no way comparable and should never be associated. They are as distinct as the palæolithic and neolithic horizons in Europe.

Mr. Mercer recognizes in the "turtle back" the initial chipping that is to be succeeded by more skilful work and an implement to be the product of the labor involved. In other words, his "turtle backs" are either unfinished but finishable objects or they are failures. Now, what I suggested, thirty years ago, were finished implements of pre-Indian origin and gave, unwisely, a local name, are really as much finished implements as a grooved axe or polished celt, if availability as a weapon or a tool is to be our guide. I may have erred in confusing some unfinished objects with real implements of the palæolithic type, but he renders confusion worse confounded. That all the conditions which obtain at Gaddis Run, Point Pleasant, and wherever else Mr. Mercer worked, would be found, outside of quarries, is inevitable considering the huge masses of argillite, in the drift gravels, upon which the tide-water people worked. But it is scarcely necessary to continue pointing out the inapplicability of his assumptions. How unwarranted they are is established by his single remark that the historic Indian "may have been living at the spot as late as 1737." Suppose he was, he was then no longer a user, to say nothing of a maker, of stone implements. He made nothing of a permanent character, unless possibly he carved a soap-stone pipe. Supplied with a gun, or, if using a bow, had arrows tipped with metal, had European manufacturers supplying all his needs, his day as a "child of Nature" was over. If a lingering band of despairing and degenerating Indians were lingering in the neighborhood or camping on the very site of Mr. Mercer's trenches, it surely has no bearing on the question of antiquity of man even in that region. He does not produce one jot or tittle of evidence to show when man first noticed the excellence of argillite at Gaddis Run. In attempting, too, to connect its exploitation with all that succeeded, he lamentably fails. Pitted hammer stones are

not sufficient. So simple a form of implement was quite within the capabilities of a man who could fabricate a "palæolith," and pitted hammers are found in Europe, where palæolithic man is as established a fact as that man there passed from this to the neolithic stage, and are not unknown in the Trenton gravels.

It is assumed, not demonstrated, that the argillite quarries, where the rock is in place, were discovered, opened and worked by the historic Indian, as were unquestionably the jasper quarries that are not so very far away. Were they synchronously operated or did one precede the other? We are not given this very important information. The utilization of jasper and quartz did not depend upon the discovery of this rock in place; why should argillite? In 1885 I discovered at Catawba where jasper arrow-points had been made. It was a long-abandoned village-site, in Atlantic county, New Jersey, on the Great Egg Harbor river, which an earlier visitor has thus described:

"The Naples yellow sand-bank of Catawba covered with oaks is visible afar. The waves of the river break into lines of foam on its beach and over the river stretch acres of meadow back of which are the fastnesses of a swamp forest.

"On the side and crest of this bank many bits of flint, broken arrow-heads and clam-shells, charred stones, fragments of crude pottery, queerly ornamented with dots and zig-zag lines, and Indian food-plants indicate that here there was once an Indian camp-ground. By the bits of flint the work-shop of the ancient arrow-head maker is easily located. Here, with rude implements, he deftly plied his trade. The charred stones, broken shells and pottery still mark the spot where the squaws once cooked their food. These are the vestiges of an age that is past—these are the relics of the mild-mannered Lenni Lenâpé."

Here are countless jasper pebbles, and these had been the source of supply for the Indian of that neighborhood. Hundreds of pebbles, partly chipped and discarded, were gathered, showing conclusively that arrow-points were made of small masses of the material but a little larger than the desired implement, while innumerable minute chips were scattered through the sand, and often so deeply buried as to suggest decided antiquity. This "find" completely upsets the view so often and confidently expressed that large masses were first blocked out, reduced to "blades" and then, at "trimming sites," of which we hear much and see little, however diligent the search, were finally finished as spear-head, arrow-point, drill or stemmed scraper.

Of probably greater import than any other consideration, or all of them together, is the fact that the argillite implements found in the non-tidal regions of the Delaware valley from the neighborhood of Point Pleasant, westward through the country (in Pennsylvania), show no such evidence of age through decomposition, as do these same forms in New Jersey from the head of tide-water, southward. I have collected so many specimens, personally, and examined so many collections made by others, that here, too, I speak confidently. It is practically certain that no stone implements were made here, *i. e.*, Point Pleasant quarries, within the past two centuries. Firearms had been fairly well distributed by 1700, and besides, the Indians had practically left the neighborhood, yet the argillite points, the chips, the long slab-like "blades" or what not from Gaddis Run are comparatively fresh or unaltered since the day of chipping. I have many specimens, found on the surface and gathered from trenches, that are as well defined as to the secondary chipping along the edges as any imperishable jasper arrow-point now shows. This is a condition that does not obtain among the argillite objects of like pattern found in the

sandy fields of New Jersey, and, as already stated, many that are found here are scarcely to be recognized so extensively has the process of disintegration progressed. If it could be shown that the soil in Bucks county, Pennsylvania, about Point Pleasant, is preservative and the sands of Burlington and Mercer counties, New Jersey, are destructive, then an explanation would be at hand, but it is not true.

Again, in comparing the two localities, the subject of encrusted argillite implements must be considered. In the sands of the tidal region of the river valley, and throughout the territory extending to the sea, incrustations of iron and sand or iron and clay are common on pebbles of every description. No mineral occurring in these sands, as pebbles or boulders, escapes this addition to its bulk, but it is significant that, while the argillite arrow-points are seldom free from some traces of this accretion, I have never found it upon any jasper or quartz arrow-point, although pebbles of these minerals are often completely coated. This I have always maintained is irrefutable evidence of the greater age of the argillite. This is not true of the objects found up the river or in the non-tidal area. No argillite implements found there have this condition of surface. Pebbles are found there so incrustated, but the operation, very slow in its work, has not had time to affect the surface of any artificially-chipped surface. The simple fact that argillite objects have been lying long enough in the sands of New Jersey to become covered with a coating of limonite is sufficient to show that these forms have nothing whatever to do with those of Point Pleasant. Throw all else out of court as irrelevant, and the single fact of the condition of these objects, "turtle backs," blades, fish-spears and arrow-points alike, point only to the one conclusion, the antiquity of man in the Delaware Valley.

From the author's point of view, Mr. Mercer hopelessly damages his whole case by the conclusion, on his part, "that the resemblance in make of a certain number of Trenton specimens to the quarry series suggests that the former had been made by modern Indians and intruded by them into the gravels." Just what he means by "intruded by them into the gravels," is by no means clear. If modern Indians deliberately buried these objects, why this pattern and not other examples of their handiwork? Nothing else has ever been found, and thirty years' search renders it probable that nothing else ever will be. If, on the other hand, Mr. Mercer means that the Indian, living here when the gravels were being gradually lain down, and lost these objects, why there is a glimmer of reason in what he says. This being led away by resemblances is most unfortunate in this case, inasmuch as it robs otherwise earnestly conducted "up-river" exploration of a great deal of its value. The shape of a chipped stone is of less value than the condition of its surface, and this Mr. Mercer has entirely overlooked.

Had early writers indulged in no speculation, had they not been over-confident as to the correctness of their impressions and so left cautious rather than confident statements concerning the Indian's origin, would the archæologists of to-day be so readily inclined to explain all that confronts them, when in the field? I trow not. Because an Indian two or three hundred years ago made a statement on such a recondite subject as tribal history, must it necessarily have been true? It may have been given as received, and accepted by all his tribesmen as veritable history, but was the Delaware Indian ever in condition to preserve history beyond the events of two or three generations at most? I think not. His involuntary records, so far as they remain, are alone reliable.

Tradition is full of interest. It fascinates. It is always plausible, but, unfortunately, "like the average white man, it is full of uncertainty." Surely, never can we tell how much, and at what rate, that which was once authentic history becomes vague and generalized when handed down from generation to generation, and merges at last into the true traditional conditions. Unfortunately for those who would know the truth, tradition takes upon itself so vigorous a life, one so able to withstand assaults, that it emulates immortality and has no feature whereby a clue to actual age can be estimated. "Long ago, in the days of our grandfathers," the equivalent of the "Once upon a time" of our familiar fairy tales, is not a phrase with which time can be measured. It may mean twenty centuries quite as likely as ten or even one. The historian can make some use of tradition on the basis of the doctrine of probabilities. If it agrees with all other forms of evidence, heed may be paid to it, but not otherwise; but to the archæologist, unless his every step is taken with the utmost care, it is a delusion and a snare. Certainly the "history" of man in America, as based upon tradition, is so-called through courtesy alone. It is a long, rambling, contradictory tale, that is pleasant to read, but conviction as to its truth does not follow perusal. Archæological explorations tell a different story, and one wherein far fewer difficulties are met.

In the essay already cited, Mr. Mercer calls to his aid, to substantiate the claim of the Delaware Indian's very recent origin, a considerable array of "authorities," and the chief among them the Walum Olam that has been exhaustively treated and discussed by the late Dr. D. G. Brinton. Grant that the translation thereof is absolutely correct, that the original, itself, is all that has been claimed for it by its most zealous advocates, it nevertheless is safe to say that there is no evidence that the Delaware river

is referred to in any one of its declaratory paragraphs. It purports to be the legend of a protracted migratory movement from point to point, but it is not so definite that we can accurately trace the route of the asserted migration. Its rivers may be any rivers, its ocean as likely one of the Great Lakes as the Atlantic. It doubtless is a record, though very vague, of actual occurrences, but of a time so very long ago that all the particulars were forgotten, and how could any event of real importance be rationally retained in the memory and as thus remembered, transmitted, when that bane of existence, fanatical superstition, was as much a misfortune of these untutored Indians as it is still of ourselves? With every facility for correct record of the passing moment, our own colonial history is far from satisfactory, and some of it a sorry hotch-potch of supposition, half-remembered events and unreliable say-so. It is remarkable, indeed, considering all else that the Walum Olam should be an actuality and preserved as it was, but nothing connected with it places it in the category of reliable history, beyond the mere fact that we have no evidence that the Delaware Indians reach the river valley of the same name from the east, or across the sea, makes it plausible that the Walum Olam tells the story of reaching the Delaware Valley from an inland point, but it does not prove it. But if there were other evidence, and we accept it as an authority, the element of measurable time is hopelessly lacking. In archæology it is all a question of time relative and not time absolute, and when we have to deal with time relative, the century is as just a unit as the year. Mr. Mercer, I believe, does not admit this, but it has ever been my claim, and nothing in archæological research has been brought to light which weakens the justness of my position.

Mr. Mercer says of the Walum Olam:

"The latter curious record, whose authenticity is tolerably well established, places eleven chiefs between the arrival of the Lenâpé at the Delaware Valley and the coming of white men (say Hudson, in 1609); and if we give twenty years to a chief's reign, the date of their first coming would have been about 1387. This agrees with what a Lenâpé told the Rev. Charles Beatty, in 1767 (Journal of a 'Two Months' Tour West of the Alleghany Mountains, Charles Beatty, p. 27, London, 1868). When counting beads on a wampum belt as years, according to tribal custom, he said that his people had come to the Delaware 370 years before, or in 1397.

"The Heckewelder version of the tradition, however, which gives no means of fixing dates, would infer that the newcomers found the country vacant. The exploring parties of the eastward migrating tribe, it says, arriving at the Susquehanna, followed it down to the Chesapeake Bay, then ascended the bay and outer seacoast and discovered the Delaware River, New Jersey, and the Hudson River,—a country abounding in game, fruits and fish, *'and with no enemy to be dreaded.'*

"This seeming absence of prior occupants in the new country is again suggested by the Walum Olam, which refers to the newly discovered land as 'a land free from snakes (enemies), a rich land, a pleasant land.'

"But without attempting to dwell too much on these traditions and their claim that the Lenâpé only arrived in the Delaware Valley five hundred years ago, and that before that time it had lain uninhabited for an unknown period, suffice it to say that at Lower Black's Eddy we have found two stages of occupancy.

"The layers prove a difference in time, short or long. The character of the objects found a difference in handiwork. Future work can alone prove whether this differ-

ence denotes a mere accident of varying tribal conditions, or a wide-spreading difference in cultural status. Let us only say now that at this one spot it exists."

The tenor of the above-quoted paragraphs from Mr. Mercer's pamphlet shows clearly as buttercups in a green pasture that his personal inclination is towards the five-century view of the subject. Thus he is the Indian's historian, and archæology is beyond his purpose. Persuaded that antiquity cannot be, he fails to see the possible significance of conditions that, it is true, may be of recent date, but the verdict of "not proven" rests over the scene of his labors. Certainly, nothing was discovered by him or by subsequent visitors to the spot to show that the Gaddis Run quarries are not themselves older than five hundred years. The debris that marks the spot had been lying there for quite two centuries when the ground was overturned and the result of much stone-flaking activity was brought to light. Why, then, must only three centuries be allowed for the period of occupancy and activity?

The unquestionable identification, if correct, in the Walum Olam, of the Susquehanna and Chesapeake Bay, of the Delaware Bay and river, and of the Hudson, which is not admitted, really bears out my own contention that the tidal region of what is now New Jersey was first reached, and at its southern extremity at that, and was settled permanently long before the argillite quarries could possibly have been discovered. The trend of settlement would necessarily be up the river, and those heavily forested highlands and the precipitous banks of the stream would be for a long time only the hunting grounds and regions for casual exploration long before any man would venture to form permanent settlements. Its acquisition for village sites and agriculture would not be like the flowing of a stream, ever moving forward. Southern New Jersey was capable of

sustaining a dense population, and in all human probability every creek, brook, and perhaps every considerable spring with a meadow about it, every open glade in the forest and the whole reach of the river shore on each side would be dotted with habitation sites before the less promising land beyond, a vast sunless forest, cold, forbidding and unattractive, was so far subdued that safe and healthful habitations were established. Nature's hand was against man among the hills and where the river flowed unceasingly and rapidly in but one direction; as much so as it was a helpful hand in the lower-lying, level plains, where there was practically nothing to contend against and a food supply in the river and along the seacoast was ever available. Yet the Indian did do all this. He acquired a thorough knowledge of every square rod of it, and if we are to pay any attention to tradition, of which Mr. Mercer thinks so much, the Indian was a dweller in the river valley many miles above Black's Eddy, when the waters were dammed at the Water Gap and a great lake glittered in the sunlight where there is now a glorious, fertile valley; and this same Indian knew the country before catastrophic action occurred at Nockanixon and the whole surface of the country changed. This is tradition. It is given for what it is worth, and will any historian of the Lenâpé have the temerity to assert that such changes as we know have occurred in the immediate river valley date back only about five hundred years?

That the river would be traced to its source, the adjacent country explored and every feature of it become known, finally, was inevitable. The Indian was never so incurious, such a stay-at-home, as to keep his wigwam ever within view. He learned in time all that the land contained. He ultimately had a name for every place and for every object it contained. He crossed and re-crossed it until the paths he wore were so far permanent at last that they are not yet

all obliterated. He tarried by the river shore or upon its islands and then sought other sites, perhaps safer ones, being driven by freshets from his home. He did all and much more than Mr. Mercer finds evidence of his doing, but who shall pretend to say when the Indian's activities among the Pennsylvania highlands began? We know when they ceased, but that avails nothing. The element of time is lacking, save as suggested, time relative. That no long-continued village was at Lower Black's Eddy was made apparent before Mr. Mercer's exploration of the site. His "layers of occupation" was not a startling discovery, yet it disconcerts him. It indicates clearly occupation, abandonment and re-occupation. It fits but ill with the claim of but three centuries, for the place was permanently abandoned two hundred years ago. Mr. Mercer is hoisted on his own petard.

It is almost trifling with the subject to take into consideration what Mr. Mercer seriously considers, the tradition that the Delaware Indians first caught sight of the river in 1397; but if such a thing had happened, it by no means follows that the land they found was virgin soil, so far as the foot of man was concerned. Hæckwelder's narrative would lead to the inference "that the newcomers found the country vacant." Here again we have nothing but assumption. There may have been no opposing force already here that stayed the Indian's progress. Battles would probably have been dimly remembered and vaguely transmitted, but that a people were here, or had been here, is not impossible or improbable. The pre-Indian argillite folk, for whose identity I have so long contended, may have disappeared, even become extinct, through plague, pestilence or famine, the constant ravages of war or persistent cannibalism. This is only conjecture, one of many possible explanations; but why consider tradition when the relics of a foregone race

point to wholly different conditions? If the Indian of historic time is not the direct descendant of a less cultured, savage, then, on reaching this locality, the task was before him of absorbing a weaker race, and it was accomplished. We have not as yet, and may never have, positive knowledge. The dissertations of Mr. Mercer and of Mr. Holmes throw no light upon the subject. Their efforts to excessively modernize the argillite quarries signally fail.

"Myself when young did eagerly frequent
 Doctor and Saint, and heard great argument
 About it and about; but evermore
 Came out by the same door where in I went."

What little we really do know may be summed up as follows:

(a) That the presence of pitted hammers is not a necessary reason for associating the objects found with them with the latest phases of Stone Age Industry; such hammers being known elsewhere at the lowest horizon.

(b) The mere presence of "turtle backs" means nothing, if by this term is implied unfinished objects or failures. They were necessarily a product also of large, rude implements, differing *in toto* from "blades."

(c) That the resemblance of one form of chipped stone to another is not necessarily an evidence of identity in age or origin.

(d) That two regions as wholly separate and apart as the non-tidal and tidal reaches of the Delaware River must each be judged on its own merits. The physical conditions being radically different, no reasoning, however cogent, that may be expended upon one region has force in another.

The conditions at Lower Black's Eddy are not favorable for accurate determination of ancient conditions. The river is even now equal to flooding a great portion, if not all of

it. It was submerged in the phenomenal flood of 1903. Such floods, where water only is the disturbing factor, do not render it impossible to discriminate between an older and a later horizon, but with an accompaniment of floating ice, it may be different. Then a gully may be formed, not by gradual displacement of the soil, but by undermining and wearing away a great mass of frozen and compact earth and filling in the hollow with material from near by. The whole original deposit may be washed away and supplied by transported material that gradually replaces it. Certain it is, that at Lower Black's Eddy there is very little that was there or like what it was in the heyday of Indian occupation. It could never have been a permanent village site. The argillite attracted but at favorable times, and the quarry at Gaddis Run visited and abandoned year after year, as the Indian's needs were met. I have said, year after year, yet why not century after century? There is not one jot or tittle of evidence going to show that ever a jasper-using, pottery-making Indian ever split a blade from the Gaddis Run quarry. There is nothing to disprove that it was a scene of industry when the man of the Delaware Valley was an argillite man exclusively. Such a supposed early occupant of the region would soon discover in the boulders of the tidal area, that not all argillite is the same, and a search for the very best of its kind in all things is not an attribute solely of advanced people, and certainly the quarry product, useless in itself, so far as known, was not so well adapted to implement-making of specialized types as the smaller pieces, nearer the dimension and shape of knife, arrow-point or spear-head.

As to the evidences of Indian occupation at Lower Black's Eddy, it must be remembered that it was the stamping ground of collectors long years before Mr. Mercer's explorations. The author has, himself, dug many a hole

in the grassy slope well above the river and near the water's edge, and was present, in June, 1890, when a considerable trench was dug through quite as suggestive ground as that opened by Mr. Mercer. Jasper arrow-points and potsherds were found near the surface, and at a lower depth, argillite points and flakes. It was an exciting moment, and we were all in hopes of discovering a "palæolithic floor," as it is called in England, but at the limit of the excavation, when near the water level, instead of any trace of earliest man, there was unearthed *a suspender buckle*. Evidently the land so near the river as at Lower Black's Eddy is not a safe basis upon which to found conclusions. That Mr. Mercer has shown that an older and more recent occupation of the site occurred, and that there was a decided difference in the condition of the people in the one case and the other has this significance. It is corroborative evidence of what we find in New Jersey in many localities, but this has been overlooked by the author we have quoted. The quarries may have been exploited by the people of the "lower layer of occupation" and the men of the "upper" been ignorant of their existence.

ANTIQUITY OF THE HISTORIC INDIAN.

There is a widespread tendency to be skeptical, among intellectual people, that works for good when it demonstrates how necessary it is to be cautious and not ever-ready to accept statement as such without other warrant of its value than the *ipse dixit* of the narrator. But skepticism may outreach too far and include in its grasp that to which it is not entitled. If nothing is accepted as true but what with our own eyes we can see and with our own ears hear, then crass ignorance must follow. Without faith we are reduced to the level of brutes, but it must be a discriminating and

not blind faith. So much for the one world in which we live, that of facts; but there is another sphere of activity, a world within a world, wherein greater freedom is allowed, the world of rational speculation. Herein we have a few facts and it is ours to make the most of them and as best we may. We can never know in the sense of the absolute knowledge of mechanics or chemistry, but guided by what we discover, be it more or less, we can convince ourselves and by future discoveries, unconvince or re-convince, but never feel that we stand upon the bed-rock of irrefutable demonstration. This is true of archæological research, particularly where we have to deal with a savage race, a people without written language, but with, almost unfortunately, a pictographic tendency, for such pictographs as remain are not often readily deciphered, at least to everybody's satisfaction. So far as the Indian population of the Delaware Valley is concerned, we have the single fact that such a people as the Lenni Lenâpé were at one time in sole and undisputed possession of the territory now known as New Jersey and Pennsylvania. Beyond this statement, caution is constantly called for. Credulity must be checked at every turn. However plain the case, when a single village site is carefully explored, our deductions are likely to be set aside by unearthing another site not far away. But all this is of little moment when compared to the experience awaiting the student of the antiquity of these people. His best evidence to-day of a great lapse of time may be successfully set aside by the discoveries of to-morrow, and perhaps not yet has enough been done to warrant an expression of probable length of time since man first sighted the river on our western and ocean on our eastern boundary.

The term "historic Indian" is a misnomer. It really bears the relation to that people that a man's funeral notice does to his life's career.

Taking as rosy a view as is permissible from the writings of the early chroniclers, and seeing the best only of what eye-witnesses narrate, exaggerating every noble quality and minimizing all that which we wish had not been, it is nevertheless evident to us, as it was not to the missionary or explorer of three centuries ago, that the Indian was then degenerating in a sense, that he was not what he had been, that his career as a "nation" had seen its rise and now was falling, and while the most intelligent among them may have been endeavoring, at the time of the white man's arrival, to upbuild and reconstruct their race, it was really a hopeless case, and there was then and had been a steady lowering process in progress and savagery becoming more pronounced rather than less so. However might have been the outcome of the contest, if such there were, between the better and the worser element, the discovery of America by Columbus sounded the Indian's death-knell. No progress could afterwards be made. The Europeanized Indian is not a successful type of humanity. He must be one or the other.

That the Lenni Lenâpé had been in more flourishing condition than when first interviewed by the evil-designing European, is evident from the fact that much had frequent place and so stood for much in their estimation which had wholly disappeared, or why had it not attracted the early travelers' attention and they in turn explained the significance thereof? The archæologist of to-day is now reduced to the necessity of calling certain forms of stone implements "ceremonial objects," but who knows aught of the ceremony and what it stood for in the minds of those who took part in it? The most difficult to fashion, that which cost the most labor and exhibits the greatest skill and knowledge of symmetrical expression, is the object of which we know, not the least, but absolutely nothing. Banner-

stones, bird-shaped stones, boat-like stones, irregularly pitted slabs, gorgets with many notches, lines, dots, swastikas, and various arrangements thereof, must have meaning. These markings are not likely to be simply an attempt at ornamentation, they are so inconspicuous. What of the idols of the Delaware Indians? John Brainerd,¹ while a missionary among the Indians of New Jersey, recorded of one of these people, that "she had an aunt * * * who kept an idol image, which, indeed partly belonged to her, and that she had a mind to go and fetch her aunt and the image, that it might be burnt; but when she went to the place she found nobody at home, and the image also was taken away." While this, indeed, is slender evidence of the occurrence of idol-worship among the Delaware Indians, it is of interest in showing that images were not unknown, and that they possessed other significance and value than as mere ornaments. Any carving in wood or stone, merely used for personal decoration, would not have become sinful in the mind of an Indian woman, through the preaching of the missionary; and a desire to destroy the object she reported as in her possession must necessarily have arisen from the fact that it was regarded with superstitious reverence and invested with supernatural powers, in their belief.

Had Brainerd been less fanatical and realized what Nature's purposes are in dealing with mankind, he would have made an effort to secure and preserve as many idols as possible and given us a dissertation upon their place in Indian economics. But those were days of intellectual darkness, when the effort at conversion was nothing more than the blind leading the blind, the unhappy, perverted Indian woman seeing far less clearly under Brainerdian ex-

¹ Abbott: *American Naturalist*. October, 1882, p. 709.

poundings than when led by the teachings of her own people.

It is to be noticed that this woman desired that the idol be destroyed by fire, thus suggesting that it was made of some such perishable material as wood. If of stone, doubtless she would have spoken of breaking it, and such idols are not unknown, if the human head carved in stone, such as that found by Rev. Samuel Lockwood, near Keyport, N. J., is an idol, or *Mesink*, and then what of the standing stones, suggestively incised with lines or plain, that stood in many places until finally overthrown by the farmer when they were in his way? Of all this matter, we know only that we know nothing, save that the Indian had developed a religion that was a step or two in advance of utter innocence of this stage of intellectual status. If nothing of all this was developed in the territory now under consideration, it certainly required many years for expressions of it to be so universally scattered, as they were at the time of their leaving the lands not more of their fathers than of their remote ancestry. On many a long-occupied village site, "problematical" objects are still found, and almost to a certainty unsolved problems will hover over these sites until every trace of them is beyond recognition.

A flood of light would be thrown upon aboriginal history did we know what the problematical objects were to their makers; but no missionary or traveler seems ever to have seen them, or seeing, to have sought information, when he might have obtained it. At a meeting of the Antiquarian Society of Philadelphia, some years ago, the late Frank H. Cushing, by means of a large series of these objects, scarcely two of which were alike except in general character, demonstrated the descent of the double-winged banner-stone from the double-bladed war-axe. The double-bladed war-axe, represented both in the hand and on the head-dress

of the figures impressed on copper from the Eutaw mounds in Georgia, served as an intermediary link, the banner-stone of beautifully banded slate being the warrior's badge, carried as an axe or worn upon the breast. Mr. Cushing suggested the Southern source of these symbolic specimens, tracing them to the extreme South, where they exist as practical weapons.

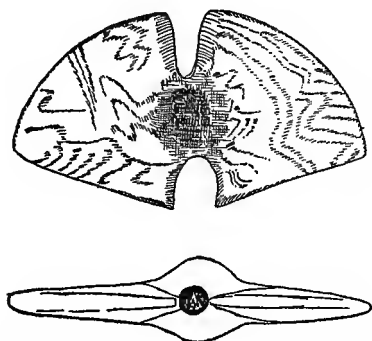


Fig. 6. Ceremonial objects, of various patterns, are common in New Jersey. The one represented by the drawing is of less frequent occurrence than those with the "wings" narrower and longer

It is possible that this object, Fig. 6, may have originated independently here in New Jersey, as modifications and amplifications of naturally perforated pebbles, but the chances are against this and favor Mr. Cushing being right in his surmise. Dr. Brinton's objections have no weight, for if double-bladed axes were ever in use here, some traces of them would be found, but as they have not been, it is fair to presume that the "banner-stone" of this region, if a derivative, was derived from the South, and so the New Jersey Indian had a Southern origin, as the Walum Olam seems to suggest, but his coming was so gradual an approach that it could scarcely be called migratory. If not, then "banner-stones" might have first been made known to them by inter-

tribal commerce. The contention is, that an article of absolutely no use, but symbolic only, and so foreign to the purposes of migratory people and not long established at any one locality, would not have been made, as thousands of them were, by the Lenâpé, had they not been here in the valley of the Delaware for ages, and not merely sojourners here under the rule of eleven successive chiefs.

It is rather disheartening to find opportunities for illuminating archæological research lost because of an unconquerable inclination to resurrect and rehabilitate the righteously buried whimsies of forgotten visionaries. Even "the lost tribes of Israel" have been looked to for comfort in endeavoring to solve the problem of America's aboriginal man. Dr. Boudinot thought he had made out his case, a century ago, but this is all forgotten now. The origin of the American Indian is a geological question primarily and archæological secondarily. It has nothing to do with history proper, or with tradition that so frequently masquerades successfully as a veritable record of the past.

How far the use of wood was general for domestic, agricultural¹ and warlike purposes is now undeterminable, but it may have been far greater than the accounts of early writers lead us to suppose, and if so, considering the vast quantity of stone implements still found, and these but a fraction of the Indian's entire possessions, then but one of two conclusions can be reached. Either there was a vastly greater population than has been believed, or the people occupied the country for a much longer period than the traditionalists so confidently claim. The harder woods, if

¹The stone spades and hoes, shoulder blades of elk or deer, clam shells; all have been reported as used in cultivation of maize, but Lucien Carr asserts *wooden* hoes were most common. Mounds of Mississippi Valley, historically considered, pp. 9, 14, 20, 25.

at all protected, are not so very perishable, yet who now living has seen a bow, shaft of an arrow, a canoe, or even a war-club, that unquestionably was made and used by a Delaware Indian in the Delaware Valley? Buried in the mud, these objects should still be preserved—wooden boats a thousand years old have been found in Europe—but so far as my own observation extends, I know only of two mortars, not authenticated, a paddle that may have been whittled by a white man and a long wooden club that cannot be proved to be of Indian origin, although this is very probable. Canoes, for instance, were hollowed out from logs and were in constant use among the river Indians, and the number of them must necessarily have been very great, yet every one of thousands has disappeared. This fact is not an argument for the antiquity of the race, except so far as it shows that we have not so much to go by in our estimates of what has been as we may think, judging only by the objects of stone and fragments of pottery.

Could we have a view of an Indian riverside village, such as once occupied the ground on both sides of the river at the head of tide-water, we would see the gently sloping shores lined with canoes and the river dotted with men in other boats passing from shore to shore, or going down the stream to their villages at the mouths of the many inflowing creeks, or laboriously working their way up-stream among the uplifted rocks that here block the further passage of the tide. Perhaps a canoe¹ without a passenger has drifted

¹ In an unpublished MS. bearing date of 21st of 5th mo. 1758, concerning the establishment of the settlement of Wyomink, I find as follows: "they (Indians) went away about 10 o'clock, and soon after showed us a mark of friendship, which was, as they went up the river about six miles above the town they found (as afterwards we had cause to believe) a number of canoes and paddles a lying on the shore, (which beyond doubt a large number of enemies had brought there and were gone to do hurt at the Minisink) they took twenty-eight of

by and all is excitement, for by such means many a warning of approaching danger has been sent. Back from the river on the fertile rising shores are orchards, both of nuts and fruits, even at last peaches, which, derived from the Spaniards in Florida and brought hither, now flourished so admirably that in 1680, an English settler compared them to "ropes of onions." The smoke from many a cooking-site floated above the tree-tops, and while Nature was not disturbed and the world here still retained that pristine freshness that makes life so well worth living, man was busy everywhere. The maize fields were models of careful culture. There was work for every one, yet time for play. There were many games known to them, and there the dance, perhaps, about those monoliths that stood in open spaces and many a painted post. There was every indication of a long-continued settlement, an aboriginal town or centre here, and the innumerable burials, in both upland and what is now a meadow, still show convincingly that the ancient man was no uncertain nomad, here to-day and gone to-morrow. The falls of the Delaware were early fixed upon as the natural centre of a race that, long-established here, flourished for centuries and then was overtaken by some swift disaster or slow-destroying intellectual cancer that gradually sapped their strength. We are fairly sure that this much we know, but the underlying cause must remain a mystery. The invading European, tyrannical, fanatical and devoid of justice, saw but the last act of the

the paddles and put them in a bark canoe and set her adrift to float down the stream, in order to give us notice there were enemies near us and might be in danger, as they supposed." * * * Titeusquand later explained the occurrence, saying, "I have been seven miles up the river where I have found more canoes and paddles, which were brought here by French Indians * * * as for the canoe coming down with paddles, these men that went up to-day put the paddles in the canoe and sent her here with the stream that we might see how matters stood."

drama, of this we may be sure, and nothing of the telling incidents of their career, and heroic struggles to reach that stage of culture that once was theirs. The English, as did the Dutch and Swedes before them, saw but the backs of departing Indians, and theirs it was to let fall the curtain that shut them from view forever.

Henry W. Haynes, in an illuminating paper on the Agricultural Implements of the New England Indians,¹ after commenting upon the accounts of early writers, adds, significantly, "But in this instance, as in so many others, the *authorities* have not told us the whole story by any means, and archæology comes in with the most irrefragable proofs." How true this is becomes impressive indeed, unless the student is hopelessly adrift through preconceived erroneous ideas, as we have already seen is sometimes the case. It is as fatal to the truth to unwarrantably modernize traces of early man as to ascribe to them unreasonable antiquity. There is ever the safe middle-ground, a coign of vantage, wherefrom the outlook is never obscured, where every condition and its value is recognized and the final decision can be made without fear of successful contradiction.

The impression of antiquity is not a fatuous condition, and reason retires to the background whenever a stone implement is picked up. There is, besides the physical sight, mental vision that projects itself beyond the naked fact of a stone lying in the dirt. The "modernist" feels this as well as others, but dishonesty is his overpowering passion. He will not reason with himself. Even the single fact that stone-implement manufacture was discarded promptly on the appearance of the white man has been vehemently denied. It has been said that a decomposed argillite fish-spear might have been chipped on the very day that Penn

¹ Proceedings, Boston Society of Natural History, vol. xxii, November, 1883.

treated with the Indians at Shackamaxon, notwithstanding that the most recent of these or other patterns chipped at Black's Eddy show practically no signs of disintegration when compared with argillite implements from central and southern New Jersey. Determination to attain an end sometimes leads to most unwise selection of means wherewith to accomplish it.

There are conditions familiar to every experienced collector of Indian relics that are explicable in more than one way, and not always is the apparently simplest solution of the problem necessarily the correct one. This is notably true of the occasional occurrence here of objects characteristic of a section of the country hundreds of miles distant. If we accept the recent migratory origin of the Delaware Indians, for instance, it is easy to understand that objects procured in a district through which these people passed might have been retained until they found a final resting-place in the valley of the Delaware. This is very reasonable when we refer to forms rarely found here but common in the mound-building districts of Ohio, or in the nearest of the southern states, but is less and less likely an explanation of such objects as Catlinite tobacco-pipes and ornaments, which must have been brought from Minnesota, or flakes of obsidian, now knives and scrapers, from even more remote localities, and what of a bead made of a shell that belongs on the west coast of Panama?

Even if the Delaware Indians moved in a body into New Jersey, by a circuitous route, or a straggling band of this people accidentally wandered here from their original home, how little probability there is that any but their most pressing needs would be considered, and how likely what they required would be furnished by the available materials found in the sections through which they passed. A migratory movement is never a rapid one. This asserted one of the

Delaware Indians was not a grand exodus under compulsion. It must have been, in those days, with that people, a slow pushing outward, first in this direction and then that, and, if met with opposition, the delay in traveling far in any one direction might be greatly prolonged. Little, likely, of personal possessions would remain after years of wandering, and over a wide extent of territory, of that with which they set out. Indeed, is it at all probable that any of the individuals of the original band would be alive by the time the migratorial journey, if we may call it such, was ended? We know, too, how general was the custom to bury their cherished personal possessions with the dead.

There is, on the other hand, another explanation that is, it seems to me, more reasonable, that of inter-tribal commerce. How far such a custom ever existed, it is impossible to determine, but if it be true, and there is no valid reason to question it, that a pipe-maker¹ wandered from the Mississippi to the mouth of the Columbia river, taking five years to perform the journey, then there is less improbability in some objects reaching New Jersey that came as far only as the copper mines of Lake Superior, the mica deposits of North Carolina, catlinite from Minnesota, and even obsidian from the far west. It is a tempting subject for speculation, with but little chance of complete demonstration, but if my contention of protracted occupation of the Delaware valley holds good, it is quite as plausible as any other explanation proposed. Only among tribes or "nations," long located in some one well-defined locality, is such commerce likely to be well-established. It is something more than mere barter. It is distinctly a feature of fixed conditions and that have been long-fixed and are generally known. That the Delaware Indians were an important people among the aborigines of North American, no one denies. They were recognized

¹ DuPratz, *History of Louisiana*, vol. ii, p. 128. London, 1763.

as a nation that were to be honestly dealt with. Individuals on trading expeditions knew that their rights would be acknowledged at home, and if violated, in times of peace, would be avenged.

That obsidian, that is not found east of the Mississippi, should find its way to the middle country, and from there occasionally to the Atlantic coast, is not an unthinkable proposition, however improbable it may seem at first. The fact, however, remains that these foreign productions do occur here and that the Indian brought them. They have been found under circumstances that set aside all possibility of their presence being attributed to even the earliest European travelers, and if a scanty trace of an established trade with distant tribes, then their little weight of evidence is wholly in favor of the view that the Indians of the valley of the Delaware were not recent-comers into this region, finding it an uninhabited country.

What, it may be asked, is included in the generic or comprehensive name, Delaware Indians, or what, rather, by their own designation of Lenni Lenâpé? They were not, when discovered by the Europeans, what we might call a homogeneous people. There were the grand divisions of Minsi, Unami and Unalachtgo,¹ and known by their totems as wolves, turtles and turkeys. They not only occupied different portions of the river-valley and adjacent country, but

¹ The Lenâpé were divided into three sub-tribes :

Minsi, properly Minsiu and formerly Minassiniu, means "people of the stony country," or, briefly, "mountaineers."

Unami, or W'namiu, means "people down the river," from naheu, down stream.

Unalachtigo, properly, W'natachtko, means "people who live near the ocean," from wunulawat, to go towards, and t'kow or t'kou, wave.

The Lenâpé and their Legends, by D. G. Brinton. Library of American Aboriginal Literature, No. v, p. 36. Philadelphia, Pa., 1885.

there were dialectic differences that are of marked significance. Did these divisions exist prior to migration? If so, would they have been retained during it? It is not probable. A wandering community is a disorganized one in many respects. After a permanent settlement has been made, and it is felt to be such, permanent organization and complicated social condition develops. Then these wandering Indians, widely separated and living now in regions as wholly unlike as the Delaware Water Gap and Cape May, with still a different country between the extremes, might well become organized as wolves, turtles and turkeys, and in time marked changes in language be brought about. Mankind in the mass cannot be hurried. The element of time is all essential and the conditions obtaining among the Delaware Indians, when first seen by the Europeans, the Swedes, Dutch and English, were all such as preclude the possibility of the earlier people, being themselves immigrants within measurable time.

When, on the high interior plateaus of the southern counties of New Jersey, we find traces of the Indian, and gather potsherds, implements and charred bones of animals that had been used as food, there is in the single evidence instance evidence only of the Indian tarrying here, but when after years of experience in examining such one-time sites of aboriginal life, we find that differences exist and that the site at one location was not like that of another, it is natural, indeed is imperative, if we would know the truth, that the reason for such differences should be made plain. They do exist and they are of two unrelated characters. There is the difference of the historic Indian jasper, quartz and pottery condition, in that in one locality it is elaborate and in the other, the same materials occurring, it is extremely rude. There is no discoverable difference in the horizon. So far as present conditions point, the two sites might have

been occupied on the same day. There is no apparent reason why one should not show as great skill in the fashioning of its object of daily use as the other, but the fact exists and why? It is not a case analogous to what now obtains. The extremes of vast wealth and abject poverty were unknown to the Lenni Lenâpé. There doubtless, as at present, were wise men and poor fools, but the weapons, household utensils and agricultural outfits did not greatly vary. We have no warrant for any such conclusion, and the alternative is, that the Indian advanced materially after he reached this part of the world. If so, the village or wigwam site, with the rudely chipped implements, coarse pottery and generally primitive outfit, is older than that where all the indications are of stone-age culture at its zenith. If this can be shown to be the case, then the assumption of the recent (*i. e.*, 1397: *vide* Mercer) appearance of the Delaware Indian in this region falls to the ground, unless it is admitted that on arrival they displaced or absorbed a people who had long preceded them. There is little to indicate any other view than that the Delaware Indian did come from some point of the compass other than east, but it was so long ago that the surface conditions of the country were very unlike what they now are.

Fortunately for the cause of truth, there is a variation from this condition of differing village sites on apparently the same horizons, and that is sites distinctly one above the other. These have more than once been brought to light. We are apt to speak so glibly nowadays of shifting sands and of the sudden overwhelming of some green and grassy location by an irruption of wind-blown sand. All very well when treating of a seacoast or a desert, but when the Delaware Indian took possession of this part of the country, the plains between the river and the sea, there were no such desert-like areas, due to deforesting the land. Vegetation covered and protected the sandy soil, and it needs

but very little of it to hold such sandy areas in check, however the March winds may rage. The Indians' maize-fields were not without protection, too, from the surrounding forests. It was, therefore, not so easy a matter for Nature to cover up the earth-scars the Indians' needs caused. A village site if abandoned, would quickly become covered with grass and weeds, but little else would reach it. The rains would not wash it away nor carry enough sand to insume it in a year or a decade. Decomposition of autumn leaves and annual weed-growths would yearly spread but a thin film over it, yet in time there was a change. The charcoal and ashes are lost to view, the potsherds are buried, the axe, the knife and the arrow are mingled with the dust and in time a giant oak or towering ash flourishes where once the ground was bare; all this has again and again been traced, and when superficial examination has been followed by exhaustive exploration, beneath the Indian site that disappeared long ages ago, there is found yet another series of equally telling objects that were in turn, through the same agencies, lost and forgotten, faded wholly from the memory of the ancient men who dwelt upon the upper site. It is when these superimposed proofs of early occupation are brought to the archæologist's attention—not the objects themselves, arranged in museum cases—that he begins to realize what Mr. Haynes has well called "the irrefragable proofs" of his science. It is no longer a mere unearthing of curiosities to please an idle moment, but the opening up of a vista that leads the mind safely and surely back towards the beginning of humanity's career, and we see, not as through a glass darkly but with the clear vision of an unbiased mind, what has been and have more than intimation of when, if not, why, or how. And when this is the reward of the archæologist's toil, as happily so often it has been, then the value of tradition that makes all a matter of yesterday, is small indeed.

CONCLUSION.

However dexterous the ancient man of America may have been, however hopelessly wrapt in mystery his origin, however puzzling the many examples of his handicraft, and repugnant to us the greater number of his customs and beliefs, now that they are but a feature of a distant past, did not age lend a charm to every tangible trace we find, the main incentive to study him or them would be lacking. Antiquity wanting, not a relic that we gather but would hold the place of a flower without color, a rose without odor, a man without a mind. It is not that we may coldly calculate the exact number of years since an axe was shaped or an arrow-point was chipped, for a few centuries, more or less, matters nothing. It is the feeling of being brought face to face with days so far long gone-by that mystery invests them; a feeling too of seeing as we never saw before, what has been. This it is that captures the mind, kindles enthusiasm, and more than this, broadens our knowledge, not alone of our own age, but of that which preceded and affected it. It was not so long ago that myth held the place now awarded to sober fact. The archæologist is dealing with humanity, and though here in the valley of the Delaware with a phase of it that rises not very far above its lowest limits, still it is sufficient to make us sympathetic and desirous that the truth shall make us generous to their memory.

An axe or an arrow-point cannot be picked up in a newly-ploughed field without a thought of its original owner. We wonder about him, for no element of doubt enters as to his one-time existence. We ask ourselves questions and, if wise, wait patiently for a reply that comes at last, when we have gathered hundreds of objects. We are too gross in our

make-up, these prosy days, to become in touch with any single example of the Indian's skill, but an array of his work in every phase of his manifold industries does appeal to all so strongly that the man behind the display is dimly discovered. A very shadowy figure, and at the best but vaguely comprehended, but still enough of a fact to be acknowledged as within the scope of brotherhood. Enthusiasm may go too far, but I for one am free to confess that when I read of vast reservations of timber land, wherein a botanist can roam and be happy, and other areas set apart for the protection of game, wherein the sportsman can indulge his murderous appetite, I wish there was still somewhere a few million acres of wild land, wherein untamed, unchanged and Nature-fashioned Indians were allowed to live in peace. Probably from them, if such there were, we might learn much and many a hopeless tangle be made straight and intelligible. Only, I think, through restoration of original conditions, will we be able to know the whole truth. This is impossible and much ignorance is our lot. The past can never return, nor is it well that it should, but our interest in it, so far as these people are concerned, can never die so long as relics continue to be found, whenever we wander where once they filled the scene, although the moccasin-print of the hunter-warrior and patient squaw have long been obliterated. Here and there are trifling bits of wild land still very much as the Indian knew them. Here the irrefragable proofs of their one-time presence still remain and every object that we hold in our hands, once held in theirs, points backward, backward only, but how far? Here is the parting of the ways of many who have reached this point. They have the relics, they acknowledge their origin, they admit they ante-date the epoch of the invading white man, but this is all. It is all that need be known, all that can be. Is this true? I have never felt content to let

my own studies and reflections, when in the field, cease with the decision that all is referrible to the Indian and what an Indian is, we cannot know. It is a most unsatisfying outcome of long-continued labor. The Europeans succeeded the Indian, and may it not be, that the Indian succeeded a people distinct from and inferior to themselves? To turn one's back on such a question, to greet with a sneer any such suggestion, to call those whose impressions lead them to think otherwise, visionaries and sensationalists, is not science, but exhibitions of that weakness which still links mankind to the headstrong—I will not say, unreasoning—brute.

When I stand on the higher ground of a vastly older geological formation, extending across the State from the head of tide-water in the Delaware river to the sea, and look across the country that is spread before me far to the east and south, and looking over the smoky city to the fair fields, meadows and wooded land that continue until lost in the horizon, I think of those vexing, mysterious and disputed chipped pebbles which are lying in the gravel and on many an upland field, and the days of glacial activity come back vividly and with them the flooded valley with its wide reach of water, and I perceive that the now-continuous land was once divided by a stream that united what are now two distinct water-sheds. The present canal is, as it were, history repeating itself, the waters of the Raritan and of the Delaware once mingling in a long-since obliterated cross-country channel. The walrus, the seal, the whale were then denizens of this forgotten deep, the seal alone remaining as a reminder of other and far-different days; while in the forests hardby, the musk-ox, the reindeer and, perhaps, the mastodon found there a congenial home, and man, was he here then? Did he then know that struggle for existence

that he now knows in and near the Arctic circle? The tell-tale bones of the animals make their former presence certain, but no bones of man, though many have been found, have yet occurred which have escaped the carping criticism of the modernist. That such ancient and Arctic man was here, I cannot doubt. His bones and his handiwork are no less a part of the history of the underlying gravels than are those of the Indian in the overlying soil of our fields.

Time passed and many the changes that were wrought as the slow centuries dragged on. The old waterway was dried, was choked with earth, was hidden from view, and forests flourished where once was a broad outstretched arm of the sea. Man, I fancy, felt the change and changed with it. The old conditions that figured so prominently in their past, were gradually discarded, as we discard the humbler utensils with which our ancestors worried through a happy existence. The innocent "palæolithic" that now rouses to wordy rage the uninstructed, was tossed aside for better weapons, and necessarily so, for the new order brought with it more wary, if not new forms of life, which human skill must now outwit. The evolution of implements was inevitable. Long was this new phase of humanity sole possessor of the land. His increased needs called for more than weapons, but the blessing of inventive faculty was never his save in a limited measure. What was this man's fate? Here I look in vain for any clue that promises success. It may be that he had the bow, it may be that he had boats, but there even conjecture must halt. The traces he has left behind him of his sojourn here are in the sands that over an extended area was then the surface of the plain, but since has been covered by the slowly accumulating mold, that continued growth of forest produces. An open and, in part, treeless country, it may be, was the home of this man of specialized argillite implements and not until the forests re-

placed the rank annual growths and dwarf shrubbery gave way to giant trees, did the scene again change and the Indian appeared. This is the reading of Nature's pages since the great glaciers dwindled to our own brief winter's ice. The text is imperfect, many a sentence is blotted out, often but here and there a word where we would have a chapter, but what we have warrants, I maintain, such an interpretation as I have given, and how very long in years it must have been for this to happen! There is nowhere a trace left of any great catastrophe. No violent up-lifting here and sudden sinking there. The up-lift was gradual. No tidal wave washed over a million acres and swept a whole people out to sea. There was no difference, one year with another, but centuries varied with centuries, and what no individual suspected, a race realized. For long, before the encroaching ice-sheet chilled the region and drove man before it from his forest home among the hills, the country was a veritable paradise for mammalian life. This we have as sure knowledge of as that the hand of man has within the historic period largely destroyed what the glaciers spared. Why not this savage man at such a time? A product of Nature, as other mammals, what reason can be adduced to warrant denying his existence also in pre-glacial time? Then, too, what boundless areas of inviting land were south of the ice-sheet's range. The teasing "palæolith" that is as nothing to so many, tells others of this ancient man. Is it probable that such men should have originated where we find traces of them, during the close of the ice-age? Where could he have come from? Not from the south, surely, for why leave pleasant lands and milder climate for one where conditions were far more exacting? But why not a dweller in the land before it was blighted by an Ice-Age winter?

As I look from the present highlands over the scenes of many years of archæological research, I see, or seem to see,

these things. My mind is deeply, ineffaceably impressed. The many inherent difficulties that others claim are fatal to my view, are resolved to idle words of protest, I am so much in earnest. How else could the disposition of the thousands of relics be explained? That it is accidental is for me unthinkable. Happily, however, a change that admits no dispute did come about and at the last we have only the historic Indian with whom to deal. Had he been a chronicler using decipherable text, we would not now be groping in the dark as to the vastly remote past, and, too would his own story be that of his historians?

When as many a day has drawn to its close, while yet I lingered in the field and every sign of white man's industry faded from view, the scattered trees became again a forest, the cry of the cougar and bleat of the fawn were heard, the bark of the fox and howling of the wolf filled the air, a lurid light of a camp-fire lit the sky; the days of the Indian had returned, nor did the illusion pass away until homeward bound, my hand was on the latch.

Archæologia Nova Cæsarea

No. III

BY

Charles Conrad Abbott, M.D.

“ The great dim centuries of long ago
Sweep past with rain and fire, with wind and snow,
And where the Savage swung his axe of stone
The blue clay silts on Titan trunks o'erthrown,
O'er mammoth's tusks, in river-horse's lair;
And, armed with deer horn, clad in girdled hair,
A later Savage in his hollow tree
Hunts the strange broods of a primeval sea.”

1909

TRENTON, N. J.
MacCrellish & Quigley, Printers.

1908.

PREFACE.

THE discussion has been as animated as it has proved unsatisfactory, that reckonable time, if I may so call it, enters into geological problems as unquestionably does sequence of events.

When we pick up a pebble and find that it is made up of minute grains of sand so cemented by silica that it is again solid rock, we are carried back to a time when this sand was rock, then broken, crushed to fragments, almost to powder, each grain rounded by running water, then exposed to other influences and a new rock formed of the fragments of another, a piece detached, rolled until all angularity had disappeared and is now a pebble. Hold such a one in your hand, and under its influence, while gazing on it, travel back to those ancient days when first one and then another of the changes occurred, or still farther back, when the elements of that rock were yet intangible, and then apply your petty method of calculating time as it affects humanity. The absurdity is at once apparent.

Time applies to human history only, and when it is to be applied to what we know as ancient human history, the greatest caution is called for, as many have found to their sorrow, when the facts of the earth have calmly contradicted the vagaries of dreamers. Nature has never recognized what man knows as "time." Always existent, but ever changing, her career extends backward throughout the eternity of the past, as it will continue throughout the eternity of the future. Man's career, as yet, is but as a fleeting shadow on the surface of the sea, and only an

approximate date need concern the archæologist who endeavors to trace this career. To endeavor to date it as we do that which has happened within recorded human history, to speak of years, centuries, or even milleniums, is the bane of archæological research. Only the most indefinite phrases, as "old" and "very old," should be used. It is the business only of the archæologist to trace the sequence of event, to arrange in proper order, if he can, the sadly mixed, disjointed and exasperatingly confused facts and fragments thereof, and set them forth again in orderly array. This is his proper work. No cherished theory, no adherence to long-settled convictions of one's days of ignorance should deter him from demonstrating, when opportunity affords, that *this* is older than *that*, and the invention of a simple form preceded the elaboration of a complex one.

Who, standing in the shadow of a patriarchal oak, will attempt to count its leaves, or trace the outlines of its tiniest twigs, or follow each sinuosity of its wrinkled bark? It is the tree as a whole that bids us pause, and there is ever enough to excite our wonder and call forth our admiration without asking the question, when was the first acorn evolved from some Quercian ancestor? Enough to know there are oaks, and for long have been; enough to know there are men, and for ages long have been, and, as a fellow feeling makes us wondrous kind, at times, it also makes some of us wondrous curious at other times; so, to inquire into the career of those who preceded us is not unnatural, nor, perhaps, without some use. There is always satisfaction in the possession of a truth, even if we can make no special use of it. Certainly we never know when a truth may come into play. Man is an incident in the progress of events, and, as such, is of some interest; but, if we associate him with time absolute or time relative, as we must an individual and his period of existence, we are led into a trackless wilderness, from which there is no escape.

"Thus, it happened," is a happy phrase, but how much care should be exercised in using it, and then, it should be always understood that it is used tentatively. When Euripides suggested our ignorance of to-morrow, in his neat way of putting it, he may not have had in mind either historian or archæologist, but they, above all people, should keep in mind that the earth turned up to-morrow may tell a different story from that which was brought to light to-day. The spade is something more, it seems, than an implement with which to dig. It proves to be a maul occasionally that knocks the bottom out of the tub into which the theorist has snugly ensconced himself. The worst of it is these petty Diogenetic archæologists complain bitterly because the littleness of their labors has not been sufficient, and their solution of a problem has not proved the genuine solution of the great problem.

Applying experiences had in other directions, it is naturally unlikely that the career of man can ever be traced without here and there a yawning and unfathomable abyss, where may be everything that vexes and nothing that satisfies; obstacles too high to clamber over, too long and broad to travel around, and far too deep to tunnel beneath them. We can imagine only in such a case, and the sole difficulty is to satisfy ourselves that we are making a scientific use of the imagination. Then, when it comes to making a statement, let the fact upon which no obscurity casts a shadow be set forth as such, and our inference or fruit of imaginative exercise be set forth as such. Then, and then only, will knowledge be advanced. This has not always been done. Some problem, into which the element of time enters, is raised upon a pedestal and so revered that all else becomes of secondary importance, and facts must be bent, twisted and contorted generally until they give some resemblance to conformity with the all-important (?) problem. A thou-

sand facts are often thus made valueless to give fictitious value to a worthless whim.

Mention need scarcely be made of the fact that it can only prove disastrous to science to make use of time to bolster up some vague tradition which has loomed into prominence because reduced to writing long after the events occurred, if, in fact, they ever did. It is well enough in a way to approximately date the time when the moon, for instance, leaped from the Pacific and started on a still more pacific career of its own. Millions of years ago! So be it; and so Lord Kelvin can compute the duration of life on this planet, but unfortunately an accurate definition of "life" is not yet forthcoming. Do crystals live? We hear much of the intelligence of plants. Is protoplasm conscious? All such speculative features of scientific research are proper enough and indeed are unavoidable, but nothing of it all pertains to the study of man's career. There are no dates in the earlier milleniums of his struggle for existence, and why the Glacial Period, innocent, dreary days of ice and snow, should be brought down to so late a time that we can almost feel its wintry breath, to make more plausible an oriental legend and fragments of the Orient's history, surpasses comprehension.

Certainly, to those now facing the serious problem of living their own lives it matters nothing when the first anthropoid strode over the plain or through the forest, not having dominion over all other beasts, himself but little in advance of them, but striving to outwit them all, and this effort has not yet ceased, for there are some creatures still that may be "lower" than mankind as a whole, but which have a wit that defies man's efforts to effect their annihilation. Nevertheless, when we see the foot-prints of a previous traveler, we, as we travel, wonder who he was that passed this way. So, too, when some trifle that fell from

human hands happens in our path, laudable curiosity is aroused, and the past is, or should be, in a measure revealed. Whether fantastically or not, depends upon ourselves. It is the business of the archæologist to see that our re-creation of a time gone by is not grotesque, but rational; that step by step we are guided by fact, not fancy, and, above all, no vain imaginings of the uninstructed of centuries ago shall poison us with their fallacious views of the world and of themselves. The philosophy of other continents is philosophical in America if it is philosophy, but oriental concepts of the origins of things have no place here. The American archæologist has to do with American man. His studies in the museum and library, and his labors in the field may never solve the problem of the American's origin. The secret may be so deeply buried no spade will ever reach it; but it may be confidently claimed, the secret, if ever brought to light, will be discovered here.

Discovered or not, man here in America, on these broad plains and in these boundless forests, had a career. None will question this, and this alone concerns us, for, as we tread it, the ground is firm beneath our feet. To the quaking bogs, in which the theorist loves to flounder, he is welcome.

Again I would call attention to the importance of right interpretation when an object of archæological significance is discovered. The spirit of the collector is too likely to control, and the desire of acquisition overrules prudence, and the specimen is removed without thought of its surroundings and considered only *per se*. Too often this means nothing. As well cut a word from the page of a book and study it, and so lose all that the page might have revealed. Even an object lying on the surface has or may have more significance than the simple fact that it is a veritable relic of an earlier century, but it is when brought to light by the spade or exposed by the crumbling of the face of a cliff

that the really important study of the object should commence. It is imperative that we first determine the nature, or trace the history of the containing bed. It is equally demanded that we eliminate all possibility of the "find" being an intrusive object, and then remove it and hear what it has to say for itself. There should be a responsive chord betwixt the finder and the found. Let nothing that is gathered become merely a specimen. One arrowhead is as good as ten thousand if that it is an arrowhead is all one cares to know. If the trunk of a patriarchal oak is split and an arrowhead is found near the heart of the log, then it can be accepted as a fact that the object struck and was held fast by the tree when the latter was a sapling, and the annual rings of growth gradually shut it from the light of day. There can be no blundering here, no unwarranted inference, no rash conclusions drawn. Error here has no ground upon which to stand and make a seductive showing. It is very much the same with traces of man found in the earth. Whether intentionally inhumed or hidden by natural forces, cataclysmic or orderly, can be determined in almost every case. If naturally shut from view, then the character of the changes of the surface which resulted ultimately in burying the relic are to be considered. Such study calls for the consideration of the element of time. No startling antiquity can be attached, it may be, to ninety and nine of every hundred objects that are found, but that one hundredth will rise to puzzle, if not vex, its discoverer, and the care given to the consideration of the others, extended to it, will result in its not fitting with any theory of modern origin. It cannot be carried forward and found a place in recent centuries, but, on the contrary, carries its finder irresistably back to so remote a time that he gropes in darkness instead of walking in the light. The knot that we seek to untie can be cut by asserting it to be an intrusive object, but here in

the valley of the Delaware these "intrusive" objects are all, as yet found, of so primitive a type that it is more difficult to understand how an historic Indian could use them, than that they were the handiwork of a less cultured folk.

The moral of all which is that a mere collector has no place in the field. He simply renders more difficult the labor of the archæologist. One stone chip, one potsherd, one fragment of bone, artificially shaped, intelligently removed from where it has rested for centuries is worth a dozen cases in any amateur's museum, however elaborately labelled and ostentatiously displayed.

Of course, all difficulty can be avoided and archæology reduced to a mere preface to history by ignoring objects possessing transcendant importance. This is the plan followed by certain institutions, and the inevitable result of a wrong impression has gone abroad. It is the prevailing view that the Americas were unknown to any race of man, until discovered by some one of them a few centuries ago. This simplifies archæology to such an extent that it becomes the plaything of the unthinking masses, and the public is permitted to reach its own conclusions—never a safe thing to do—providing always it closes its eyes when any object suggestive of a lapse of centuries is held up before them. If palæontology were treated in such a manner, what would we know now of the succession of forms in the various geological horizons, from the earliest to the latest? As it is, American palæontology ranks high in the court of science, and deservedly so; while those whose advantages in archæological research have been greatest, have very nearly dragged it down to the level of a farce.

If what has been called heretofore archæology, is not such but ancient history of a modern type, as the Bureau of

Ethnology declares, then by all means change the nomenclature and call a spade a spade. At least make a show of honesty, even if none exists.

It has been superciliously claimed recently that North American archæology was not a subject of scientific research forty odd years ago, when an institution for such research was founded. If not then, it is no more so now. The truth is that the subject was not scientifically treated, and now, to make a great show of activity, the ends of the earth are swept up into a heap and the dust that is raised obscures the original purpose of those who would have the origin and career of early man in America determined. The handiwork in stone, bone and clay of the North American Indian is asserted to be a matter "of narrow and well-defined limit." Narrow, because of the narrow view taken of it, or spitefully called "narrow" because too great to be grasped; and "well-defined," if by this term is meant what North American archæology really comprehends, but not defined in detail by any means, if we may judge from the endless array of specimens duly labelled as an implement of war, agriculture or hunting. Beyond that, a pitiful blank, that becomes the more so as the quantity of material increases. "Narrow and well-defined," the archæology of the Atlantic seaboard may be, but nowhere is the whole matter set forth in detail. The purpose of first importance of archæological research is to determine the beginning of an industry, to date relatively the beginning of occupation of a given territory. This may all be within the "well-defined" limits referred to, but the line of separation twixt archæology and geology, or the place of American archæology in world-wide anthropology has not yet been brought into the realm of the readily discernible.

The relationship of North America to other portions of the globe is eminently desirable to ascertain; without it, all

the facts, if ascertainable, of one region, would be of little value, but the facts of all other regions will not help us to bring to light the past of our own country. When a relic of stone, bone or clay can be picked up in the fields and its whole story told, its entire significance expounded without hesitation or reservation, it will be found that the subject of North American archæology, as a whole, is not so very "narrow," and the definition of its limits be found such that we can only wonder that a subject so full of interest should have been so long neglected and even treated with contempt and ill-treated through crass ignorance as it has been.

Seeing a great crowd, we get but a poor impression of humanity; so too, seeing a vast accumulation of relics does not throw light on their origin. One grooved stone axe will tell the story of them all, if we can but get it to speak for itself. Why a groove about it, instead of a hole through it, as we find them in Europe? Have those who look with ill-disguised impatience at the pre-historic objects of their own surroundings, told us this simple fact? The spirit of accumulation is fatal to that of investigation. Mounds have been levelled, when robbed of their treasures, but the builder of the mound has not yet figured in history or been awarded a paragraph in any annual report. The subject may be too "narrow and well-defined" to need this, but here there is difference of opinion. There are those who want to know of the man who made the arrowhead and shaped the axe and left the endless potsherds in our fields. What other countries have to say and show may not appeal to us. Nothing distinctly beyond their boundaries can solve the problem of the Atlantic seaboard States, and these are by no means one in their ancient history. There is room to wander without danger of collision in these "narrow and well-defined limits," and enough to be discovered to keep the honest student busy all his life; nor is it likely that the

tale when told will prove without interest, without stirring incident, without those features of mankind's later history which are ever as prominent as they are proof of a lowly origin.

That forty odd years of familiarity with stone implements could lead only to the conclusion that they are not objects of scientific research, and rouse but an idle interest that is "narrow" and a significance that is "well-defined," is a trifle discouraging perhaps, but we must consider that it is a museum-born conclusion and had the significance of the fields gone with the object, another story might now be told.

A check to the progress that might have been made years ago in reaching to a reasonably comprehensive conclusion is the constantly occurring contradictions that face the explorer. Nothing disturbs the theorists in his study, still less is the curator perturbed when arranging his specimens; all, in either case, is what he wishes it to be; but the spade has no consideration for the man who uses it. It brings to light whatever is in the ground, and not simply what, according to theorists ought to be there. No one is so severely and so frequently jolted as the archæologist when in the field. He cannot withstand the temptation to formulate his facts as he acquires them. They must be set in orderly array that they may not disturb the mind while the hands are busy; but how often, when the sky is clearest and the outlook fair, suddenly the cloud of a contradiction sweeps over sky and plain and the mists of doubt envelops them. This is not so unhappy an occurrence as the reader might think. It only demonstrates the danger of theorizing on insufficient data. Sum up the day's work only at the close of the day; sum up the year's work only at the close of the year, and finally, sum up the life's work at the end of

a life. There will be fewer mistakes made and the little that is left behind, when the archæologist passes away, will be worth the having.

There is another view to be taken of contradictions, as we meet with them in the field. They are a constant caution against too limited a view. Your own field and your neighbor's may tell different stories. No one house in a city tells how all the citizens live. So no two limited localities will prove the same, on exploration. The counterpart of some one day's experience may never happen. Unique conditions are the rule, thousands of acres considered, and so there are many unique objects, outcomes each of a passing thought that was never repeated. But through them all there is a common significance; however varying, there is a common origin. Just as two individuals, to-day, would surely, if they could trace the matter far enough back, find a common ancestor, so it is in the study of a people once occupying any clearly defined territory. The thing in common is the proper quest of the archæologist. The special is always for subsequent consideration. The former, when once upon the right track, can be traced with some degree of certainty. The contradictions should not deter us in proceeding or be allowed to chill that enthusiasm, without which, effort is vain. Often these same contradictions, as we hold them, are only facts out of place, and will fill again their proper niches when we have reached far enough back to realize what the past has been. We know better what the depth of a well means when we stand at the bottom of it and look upward.

No one has as yet reached the beginnings of human activity on this continent, nor will it ever be reached except by digging for it, and not idly speculating as to the ultimate result of the effort. As yet, only a small area has been passed through a sieve and the treasure it contained separated, and until this has been done a hundred fold more

than at present, will it be warranted to speak, even if then, in absolute confidence and defy criticism. While the questions involved are still in a tentative shape, this is no reason why the convictions of the individual, at the close of his life's work, should not be set forth and defended until further exploration sets his conclusions permanently aside.

The morning is still fresh; no one has borne the heat and burden of the day. Work, not words, is the order of the hour, and this is preëminently true here in the valley of the Delaware, where every chip of stone is an ancient's autograph and every finished implement his autobiography.

Whether or not a wiser procedure to have remained silent after thirty-six years of labor in the field, is not now to be considered. Thirty-six years ago I invited criticism by unqualified statements of views which have as yet stood, although they may not always stand, the test of time. As years rolled by, I was not inclined to alter any material view, and made but few changes in subsequent statements as to minor matters.

Palæolithic man may never have existed, the later argillite man may be a figment of a too active imagination, and all traces of early man reduced to a recent date, when, as Mr. Mercer presumes, the Delaware valley broke out suddenly with humanity, like a child with the measles, but still I do not believe it.

In conclusion, it is proper here to express my many obligations to M. Taylor Pyne, Esq., of Princeton, N. J., whose unflagging interest in my work and substantial encouragement at all times, made it possible to carry on my investigations until now, when I cheerfully pass on the problem of man's origin in the Delaware Valley to younger and more competent hands.

THREE BEECHES, Trenton, N. J., October 13th, 1908. C. C. A.

ARCHÆOLOGIA

NOVA

CÆSAREA

II.

THE PEOPLING OF NORTH AMERICA.

THE PEOPLING of North America is as yet an unsolved problem. There is a theory for every day in the year and every change of the wind, but there has been no demonstration. The most plausible is the possibility of drifting from Japan or that general locality eastward to the Aleutian Islands. A word here as to this. If it did ever happen, then it was so very long ago, that the few slight resemblances of a physical character were the principle characteristics of both peoples, and since then the two races have been built up on very divergent lines. All this calls for an antiquity which refers the whole subject to the scope of geological rather than ethnological research.

What relation the circumpolar people have to the North American Indian is still a puzzle. The results of exploration and thoroughly scientific investigation lead rather to inference than conviction, and it is the history, as we know it, of the so-called Eskimo that calls for a lapse of time that is not readily computed. The earliest people left no unmistakable track behind them in their march. How do we know, to-day, that bears, wolves and wild-cats were once abundant in our back yards, and that where we have plotted a garden path may have been in other days an Indian trail? It is a matter of hearsay, of vague tradition, of fragmentary history originally written by incompetent historians. The evidences, substantial, indisputable and overwhelming have, long before this, effectually disappeared. Still, we do have what we call positive knowledge, in the records of the days when European and American came in contact, but no such conditions obtain in the pre-

ceding chapter of the Earth record. The native American did not chronicle his career nor place beyond irrecoverable loss, his origin. All traces of early man are accidental, and it follows, consequently, that all efforts to make plain the significance of such traces are equally uncertain. We may be right, the truth may be set forth, but the element of uncertainty hangs over it all as the mists of dawn obscure the rising sun.

While it is painfully like groping in the dark, the conditions among the Indians in 1620-1680, earlier and later, were undoubtedly such that a long time must have elapsed to have brought them about. Progress is very slow among savage peoples. There is almost no incentive to change. The influences that effect a people are due to physical conditions altering. In such case, the required amount of adaptation takes place. Such changes of the earth's surface, of the climate, of fauna and flora are never sudden, but when they do occur they exert an influence no people can withstand. All this has happened, but not a measurable part of it is a matter of yesterday. It is reasonable to infer that far less seldom than now did a prophet arise among them and lead the way towards better conditions, if not a better land. Such unwelcome disturbances belong, as of old, to the semi-civilized of a barren country, where day-dreaming is the most strenuous occupation, or among ourselves, so over-burdened with civilization, the working of the machinery is irregular and the inevitable happens. The prophet has degenerated to a freak, yet it has no less a following.

The North American Continent has always called for sane methods of living. Effort has been the price of success. The Indian found it so at the outset, and was finding it so when in 1492 a change came o'er the spirit of his dream. Canassatego was doubtless right when he claimed the Indians were better off before the arrival of the Euro-

peans than ever afterwards. They had fitted themselves into a niche and were living as they wished, and under such circumstances all change was necessarily, must necessarily have been, slow. A century has less an effect upon them than does a decade upon our unfortunate selves.

The most interesting phase of this question, the peopling of America, is that which associates man with the mastodon and elephant. This subject comes well within the scope of the archæology of New Jersey, because these huge proboscideans were once abundant here, as gravel beds, swamps and peat-bogs attest.

Cleverly as the geological history of the North American Continent has been worked out, and accurate as is our knowledge of its secondary and tertiary faunas, it is still evident that our knowledge, while accurate as far as it extends, is not complete. Curiously enough, the nearer we get to our own time, the less assured are we of our facts. No mystery surrounds the oyster in the cretaceous marls, but nothing but mystery envelops the scattered bones in even recent gravels.

When an extensive earth-work is well nigh obliterated by a flood, what remains enables us to trace the outlines of the original structure. We can do as much by means of the vexatiously scanty traces of certain forms of life of a geological epoch. One tooth of an elephant is as substantial evidence of the beast's one time existence as the skeletons of a thousand of these ponderous creatures, and with such a starting point, the life of the individual and the habits of a herd thereof, can so far be depicted to the mind's eye that the student has every reason to be satisfied. To go to Africa and deliberately murder one would not teach him more. But it should be remembered that he has started from the time of the established career of the animal in this country,

and is not walking on as firm ground when he ventures backward and hopes to determine when that career commenced. If every mammal whose remains have been found in North America could be shown to have been evolved on American soil, the difficulties would all vanish. The American man could, if he would, look kindly upon the American monkey, which still holds its own in our tropical jungles. Palæontological research, however, certainly warrants nothing of the kind. We must look elsewhere for American man's origin, and elsewhere, too, for the mastodon and elephant. Both beasts wandered up and down the Delaware valley. A tooth, a tusk, or some fragment of a bone tells the whole story.

Where the traces of these beasts occur is of great significance. They do not belong to the surface as do skeletons of Indians and Colonial coins. We do not pick them up in ploughed fields, as we do the bones of bears, deer, beaver, and even the wapiti; but, when the present surface soil is removed, and when the underlying stratum of compact sand is penetrated, we find in the coarser gravels that were deposited here by glacial floods these proboscidean remains. They are a constituent part of the gravel. They have much the same surface as the associated pebbles. They have been subjected to the same conditions, yet many of them are not as old. The ordeal that reduced fragments of rock to rounded pebbles would have reduced them to powder, or, at least, have destroyed all resemblance to their original outline. They date from a time when the associated pebbles, as such, were transported to their present position by the ancient floods. Huge carcasses floated in the relentless current of the stream, were stranded at last, and finally the bones were scattered, and now, at this distant day, a fragment occasionally comes to light. We are never so much impressed with this fact as when we recall how very scanty

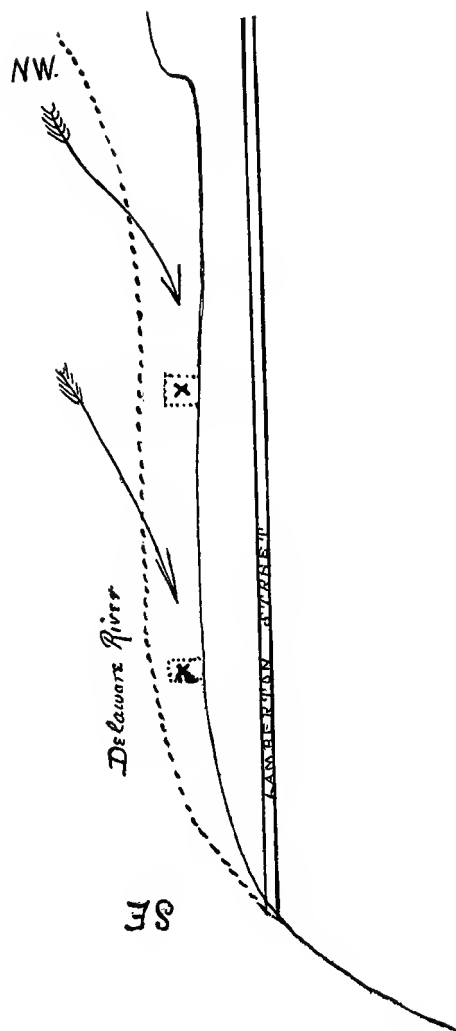
are the traces of these animals. Great herds were once here, and their teeth and bones are not so readily decayed that time sufficient has elapsed to destroy them. The majority of such elephants and mastodons as were trapped by the floods were in all probability carried out to sea. The land that was once within our coastline, and now far beyond it, may be the resting place of these animals, just as now the Siberian marshes are a proboscidean cemetery. All this is conjectural, but the fact remains, unaffected by any theory, there were elephants and mastodons in pre-glacial, interglacial, and at least in the earliest of what we may call post-glacial days. We have nothing to positively demonstrate that the Indian or his quite remote ancestors had any knowledge of such a creature.

Here, in the valley of the Delaware, with which I am alone concerned, the occurrence of a trace of these animals is, I think I may say, always in the gravel, and just as the rude chipped implement that we call palæolithic sometimes occurs there. Nowhere have been found any traces of the later Indian in the gravel as a constituent part thereof, nor any trace of the mastodon or elephant with remains of the native race that last occupied the region. The two are wholly separate and apart. Confusion has arisen by speaking of the association of man and the mastodon, and the inference being drawn that to the historic Indian reference was made. If these people, such as we know they were when Columbus discovered America, had been familiar with the animal in question, the remains of the latter should be still as much in evidence as are those of the men who supposedly hunted them. This is true of the elk, bear and deer and smaller mammals, the Indians' mainstay for food, so why not the more resisting bones of the larger creatures? We know that the mastodon and mammoth preceded man; we do not know that they survived until the "Indian" was

this country's established type of man. The over-wrought and unquestionably fraudulent "Lenâpè" stone would seem to tell another story, but this encyclopedic slab of slate, etched by a left-handed scamp, refutes its own claim. There might be no other etched gorget like it, but this is improbable, and more so, if these animals could be depicted so vividly in that manner, in other ways it would have been at least hinted at, when we find that stone carving and pebble shaping were so commonly practiced. The Lenâpè stone really does not deserve reference made to it, nor would it receive attention had not misguided and jejune enthusiasm been so persistent in keeping in evidence a palpable fraud that should have been purchased and destroyed, instead of preserved and published.

As stated, the association of man and elephantine remains is another problem; that is, it is another problem if certain rudely chipped stones found also in the gravel are not of Indian, but of human origin. This still mooted point draws nearer to a definite settlement as investigation proceeds. The constantly accumulating evidence, as I view the matter, tends to separate, and not associate the two.

I have already (Archæologia Nova Cæsarea, No. I, p. 4,) called attention to Mr. Holmes' statement to effect that chipped stones were abundant at the foot of the bluff facing the river—he wrote this in 1893—and claimed they were practically where the Indians left them, having tossed them aside as refractory, and gives them the name "rejects." The question arises, would Mr. Holmes have made quite the same report had he visited the spot a century earlier, when the shore line was at least fifty feet river-ward or westward of the present bluff. As the outline sketch shows, where now is nothing but the open air, there were storehouses and wharves back of them. Necessarily, no wild Indian *i. e.*,



Dotted line, bluff in 1800.

Continuous line, bluff in 1908.

Dotted squares, store houses prior to 1850.

Fig. 1.

pre-colonial, ever saw the present bluff or Jersey shore of the river as it now is. What then of Mr. Holmes' abundant "rejects" on the present bluff or at the foot of it? These must either have fallen from the top, or from the crumbling face of the bluff, or been carried down stream by freshets. All the evidence favors their coming from the gravel that constitutes the bank of the stream at this point. These specimens may have been discarded by ancient man, but the only "reject" in the whole question is Mr. Holmes' visionary account of the conditions here and their archæological significance.

It was not so long ago, that while looking for palæolithic implements or other traces of ancient man, a friend picked from the compact gravel of the face of the bluff, that there constituted the river's bank, and at a significant depth, a tooth of a mastodon,¹ and back from the bluff, from the bottom of a grave then being dug, an argillite implement was thrown to the surface. The horizon was essentially the same. The gravel was the one deposit. Shall we say that the chipped argillite was an intrusive object and the tooth in place, and so stifle all inquiry, or shall we look the simple fact in the face, accept its purport, and admit the contemporaneity of the man and the mastodon. I propose to do so. It is a logical conclusion. It violates no canon of geological law. It may run counter to pre-conceived opinion. Facts are apt to do so in proportion to their importance, but this unhappy condition should not act as a deterrent.

¹It may be claimed that proboscidean teeth were already fossils when they became a constituent part of the mass we call a gravel deposit, that they are ivory pebbles, as we have others of quartz, sandstone, slate and hornblende—gneiss. This is not true, however, as the specimens have not undergone any degree of petrification, but only suffered a greater or less degree of disintegration. On the other hand, they can be looked upon in no sense as intrusive objects. The condition of the containing bed forbids this supposition.

The mastodon and elephant are not indigenous. They wandered into America from another continent, and the land communication between the one land and the other must have been a substantial area of firm earth and vigorous vegetation. Just when did all this happen? The researches of Prof. Osborne seem to indicate that Africa was the original home of the elephant, and that it found its way to America—and necessarily to North America first—thus showing it to be “the greatest pre-historic traveler among all the animals of the earth.”

Prof. Osborne’s own view of the association of man and elephant is, or was in 1906, as follows:

“It is difficult to give anything like an adequate estimate of the period during which man has been on the American continent. Personally, I am inclined to the view that man has been in America much longer than is generally estimated, and that we may at any moment discover proofs.

* * * * *

“Unfortunately, our pleistocene deposits in this country are not so definitely laid down nor so easy to determine from fossils as those of Europe. Just before the ice age we have the well-defined sands of the so-called equus, or horse beds, in which the remains of camels, horses and elephants occur. This is roughly estimated at from two hundred to two hundred and fifty thousand years back, and some maintain that traces of man have been found even in this remote period, but the evidence is conflicting and by no means generally accepted.

* * * * *

“The beginning of the pleistocene period was the close of what may be termed the African stage in the history of North American fauna—that is, elephants undoubtedly African in origin, were present in abundance; also horses,

either of African or of Asiatic origin; camels and llamas mingled with a few distinctively North American forms, such as the large kinds of peccaries, but with practically very little of the North European fauna.

"It would seem not impossible nor improbable that man, well known in Europe as a hunter of the mammoth, may have found his way to North America in pursuit of these animals. At least, there was nothing to prevent the advent of man at a very early period. There were no physical barriers, such as extremely cold temperature, nor were there the present wide Behring Straits to be traversed. It must be remembered, however, that the existence of man in Europe has not been proved at this early pleistocene period, and Europe was still more intensely African in the character of its fauna, owing to its greater proximity to Africa. For example, the peculiarly African hippopotami were present in the rivers of Europe."

Did man, at a later date, cross these "former land bridges," yet at a date so early that the American proboscideans still roamed the country? To derive American man from an African source may be rather startling, but when we recall the fact of there being an element in common between Eskimo and Bushman art that goes far to indicate a common origin,¹ we realize how wide is the prospect over which the imagination is required scientifically to roam, if all the facts bearing upon early man in America are desired, and without all of them, but little can be done. A sturdy structure requires stout material. The temple of American archæology has not yet been built, but its outlines are fairly well defined, and the solid base upon which it rises is the rude implement of the rude man which had wandered over all the northern hemisphere

¹Comparative Art. E. S. Balch, Philad. 1906, p. 84.

when a different climate and a different fauna were its most prominent features.

Let us follow this a little farther. There is evidence sufficient for all reasonable demands that the circum-polar people have been longer on the North American continent than has the historic Indian, unless it can be shown that the latter are a modification of the former, having undergone such changes as a milder climate would produce. That the arctic man or Eskimo dates back to pre-glacial time is a logical inference. There is also evidence, as I have persistently claimed, although it is vigorously disputed, that the man of the Delaware valley who depended wholly upon argillite for implement-making was more akin in mode of life, at least, if not genetically, to the Eskimo of the present than to his successor, the pottery-making, flint-chipping Indian. May not, then, the traces of man, so separable from the surface-found Indian relics, be as old as the older strata of sand and gravel and contemporaneous with the elephant and mastodon? This line of reasoning may not satisfy the cautious reader; mine may be, he holds, specious arguments that will be shown in their true light sooner or later, but it is with unbounded confidence that I claim these suggestions to be better fitted to our few unquestioned facts than to refer everything we find, deep in the ground or on the surface, to the Indian. To do this, leaves us still in the dark. It has not yet been demonstrated what the term "Indian" really implies.

It is inconceivable that the Eskimo went from what we consider a much more desirable country and deliberately chose the polar regions, with its walrus, musk ox and polar bear, for the bison, elk, black bear and deer, which were ever more abundant and more easily obtained. On the other hand, if these people were at one time far south of their present range, and driven northward, then this happened a very long

time ago. They must necessarily have preceded the encroaching and attacking people, and whence came the latter? A roving band would never have successfully contended with a settled people. It was a question of numbers against numbers, and the conditions of population must have come gradually about. This calls for centuries. It is a matter of "time relative" and not "time absolute." It means a condition very slowly effected over a continent. The disposition to minimize the age of every trace discovered is not due to scientific acumen but limitation of archæological insight. When Mr. Holmes of the Bureau of Ethnology asserts: "I find no satisfactory proof of the existence of man in America beyond a few thousand years. He may have occupied some parts of the continent at the close of the glacial period, which, in our Northern States, was probably some ten or fifteen thousand years ago, but the proofs are not yet conclusive." He should have added, no proofs that will ever satisfy him, because of pre-conceived notions of modernity. He is consistent only in his attitude towards reasonable demonstration and logical inference. When he adds: "The manifest age of the kitchen middens along our coasts, and the magnitude of certain ruined cities in Mexico, Central America and Peru suggest a considerable antiquity—a thousand years or more—the highest estimate supported by scientific observations being three thousand years," he simply offers a gratuitous assumption without a scintilla of warrant, at least so far as our coast-wise shell heaps are concerned. Since their foundations were laid, their has been up-lifting and sinking of the clay upon which they rest and to limit this to one thousand years is as idle as the prattle of a child at play. It is such "official" announcements to an ignorant public that so seriously obstructs the progress of scientific research and of truth.

As if to mitigate the mischief of previous assertions, it is grudgingly admitted "one of the most satisfactory proofs of

considerable age is the highly specialized character of the race as such and of its languages and arts." Here we have the whole matter in a nutshell, but it is not an original assertion. The question of so many years or so many centuries is as foreign to the subject as is Sheol from Paradise. What the archæologist wishes to know, has there or has there not been an unfolding of the faculties on this continent? Was ancient man as wise when he reached it as when he left it, or did he sojourn here long enough to become familiar with all its forests and prairies, its oceans on either side and the great gulf in the south? Had he learned the habits of the beasts of the forest and the birds of the air; had he coined a name for each of them? Had ideas become directive and ceased to be confusing as to Nature and her workings? And beyond all were the men who signed the treaty under the outreaching arms of the elm at Shackamaxon descendants of America's first human occupants or of a later people, which supplanted them? My own convictions, based upon my own researches, here, in this modest valley of an unpretentious river, is that all this did occur, and that it indicates, not what Mr. Holmes most unwillingly admits as "proofs of considerable age," but establishes the occurrence of epochs in the occupancy of North America by man.

Nature may send a tidal wave over some level expanse and sweep away all that she had done for years to beautify and, as man might think, establish it; she may rouse the sleeping energies at the base of a volcano and devastate all the region about it. Islands of the sea may appear and disappear while man stands a witness of her mighty efforts, but nevertheless, Nature is never, the world over, in haste and her grand totals are the summing up of activities of such modest character that like the hour hand of a clock, we cannot see them move. Man, who is nothing save a product

of Nature, an animal among animals, moves *en masse*, and is moved by the same laws that govern other animals and hold good throughout the world. The individual counts for little. The race as a whole, changes slowly. To attempt to estimate the lapse of time in tracing the career of man on the earth or in any of its continents, is puerile. As well attempt to determine when the first green blade of grass relieved the monotony of the dull brown earth; when first the blithesome carol of the lark greeted the coming of the welcome dawn.

Conceding this, the probability—and this is all, as yet, that has been acquired by any investigator—is that the last elephant and mastadon had not disappeared before the pioneers of the human race in America came upon the scene. We cannot conceive of any discovery that will demonstrate that the two, man and mastadon, never met in America. We need not be surprised, at any day, to have all doubt forever set aside.

THE DELAWARE VALLEY.

In Dana's *Manual of Geology*,¹ the author thereof, speaking of the coast line of our eastern seaboard during the cretaceous period, refers to the Delaware river as then in existence, and states that it "emptied into the Atlantic at Trenton."

That portion of the river's valley from Trenton, northward, presents no features that are not readily understood by the geologist as he passes, mile by mile, up-stream, and finds the hills that once were rugged in outline and bare, and now are shorn of all unshapeliness and covered with dense vegetation. Perhaps shorn, too, of their height, for

¹Second Edition, 1875, p. 478.

the term "mountain" is no longer applicable. Tracing their history the geologist finds no startling revelation of stupendous activities or devastating cataclysms. It is true the "ringing rocks" are suggestive of a one-time volcano's crater, but the region as a whole is not one that puzzles by apparent contradictions. These hills are old, even geologically speaking, yet they tell a straightforward story, and the river repeats it as it ripples at their base.

Far otherwise, from Trenton southward. There we find no fixed features. From those far off days when the Atlantic beat its waves hopelessly on the rocks that shut out the sea, until to-day, when the tide reaches these same rocks, but cannot ascend them, there has been a long series of changes of more or less marked degree, but no cessation of them. Nothing is fixed as in the sense of solid rock. Here to-day and gone to-morrow has been the fate of every feature that while it lasted bore the outward resemblance of a permanent condition. But the to-day and to-morrow of which I speak were no such periods as these words now imply. Geological reckoning of time is free of the swaddling clothes of numbers. It is sequence of event without regard of time duration. Rocky strata are not paged like the leaves of a book and the same is equally true of the strata of sand and gravel, and the vast deposits of clay and the thin veins of it that streak both the sand and the gravel. Here, at Trenton, at the head of tide-water, we can find a deposit that tallies admirably with any cherished theory, but no theory has yet been framed that rationally includes all the deposits. It would seem as if geologists waited for gravel to become solidified, and then they crystallized their erudition in the word "conglomerate" and looked wise. At this no one need wonder. To trace the history of a gravel bed is much like the proverbial search in a haystack for a needle. The associated pebbles and sand conspire to confuse us.

They are not always the same. The face of a bluff made up of such material as pebbles, boulders and sand, with clay enough to slightly cement the whole mass, does not retain any uniformity as to its composition, as day by day the old face crumbles and a new one appears. A year's exploration may lead to the conclusion that no large "erratics" are found in the deposit, and then a dozen or more may be brought to light of a size that at once determine the gravel was not a quiet river-bed deposit. Ten years may elapse and not a trace of bone is found, and we begin to believe that no mammalian life occurred in the region from which the deposit was derived, and then patient search at last reveals a tooth or fragment of a bone.¹ A revision of the conclusions as to the gravel's history becomes necessary. This was notably so of the Trenton gravel, that was originally set down as a deposit of water-worn pebbles that have lost all angularity, and so were readily dissociated from those which go to make up the terminal moraine, miles to the northward, and from which unquestionably the Trenton gravel was derived. But, at last, ice-scratched pebbles began to be found, and many a considerable portion of the deposit itself suggests that, as a frozen mass, it moved southward without disintegration and settled quietly in this less tumultuous neighborhood. It is very significant that where the gravel least suggests the probability of animal or human remains they appear never to have occurred, but where this supposedly same gravel has all the appearance of a later origin and resembles more closely the present river bed, there we look for traces of former life, and are not always disappointed. To recognize such differences as have been here mentioned in a formation geologically the same, and logically comprehended under one descriptive term, it is necessary that we

¹Mr. Volk's finds include one bone of a musk ox and a fragment of antler.

see it under endless different conditions, and continually, year after year. The visiting geologist, seeing a cellar hole or passing an hour along the river's bank, or looking idly along a railroad cutting, acquires only that general impression which goes far to fill pages of a geological report and gives us no information.

It is safe to say, if there is any element of safety in such trains of thought, that the Trenton gravel is derived from the terminal moraine which extends across the State some miles northward of them, and through which the river found its way, and still finds it, in the valley that now confines the stream, but it is not safe to conclude that no gravel was already spread above the clay that underlies these deposits as a whole. There were pebbles, as we know, æons before glacial activity, and it does not require the swift current of melting ice and snow to produce them.

An exhaustive examination, in 1907, of the material dredged from the bed of the river at Periwig bar,¹ within the tide-water area but near its termination, revealed the fact that many hard substances of known origin, as brick, glass and earthen ware, had been rolled and rounded in the sand until very pebble-like in shape and given a surface that made their true character problematical until closely examined. It was somewhat disconcerting to find that objects that were fashioned well within the century were so altered by water-wearing. How, then, could we expect a chipped argillite implement to escape obliteration of all evidence of its artificialty? If these objects, which, if of Indian origin, could not be less than two hundred and

¹Periwig bar was originally an island of some extent and covered with a dense growth of trees and shrubbery. The one-time site of an Indian village. The channel of the river was between it and the Pennsylvania shore. The material removed by the dredgers was largely the base of the island which was washed away to the water's edge in the great ice-jam and freshet of February, 1857.

twenty-five years old, had rolled down the river from the argillite quarries and been subsequently subjected to water and sand erosion, would they not have lost all trace of their chipping; would not the outline of every spall detached be worn away? This, it is submitted, argues more against the modern or Mercerian-Holmesian view than against that which I uphold. As well defined artifacts do occur in the gravel and such gravel was all transported by water, it is apparent that when they were dropped to near or in quite the position where they now occur they were protected by prompt inhumation, as where there was yielding sand and a generally loose texture of the mass, and inasmuch as angular pebbles with sharp edges and others still bearing ice-scratches occur sparingly in the deposit, there is no reason why an artifact should not retain its artifactuality. They were never subjected to like conditions as the pebbles that were dredged from the present river bed, or never to the same extent. The men who chipped them, it must ever be kept in mind, were not amphibious animals. They need not have been as much at home on the water as the Eskimo. There was ever a wide range of land near by, over which no ice-sheet found its way, and no floods covered the forest-clad sands of the river's eastern shore. The terminal moraine was fifty miles away. That this supposed ancient man of glacial time frequented the water and hunted the seal, walrus and musk ox, is scarcely questionable, and the objects that he lost, his "palæolithic" artifact may have long lain *on* the gravel before floods brought down additional material and covering it, it rested at last *in* the gravel.

The great heterogeneous mass or deposit known now as the Trenton gravel was not poured down the valley like tea from the spout of a pot, or came tumbling down from the hill-sides spasmodically, spreading over the low

lands and filling the depressions as lava from a volcano, in a brief space, changes the landscape. Just as now we have floods at intervals that are irresistible and over-spread great areas of the lowlands, so in glacial times there were evidently even mightier ones that brought down mud, gravel and sand as they now bring down wood, and brought also boulders weighing tons, as to-day they bring down great trees from the sad remnants of the mountain forests. What at that time happened here at Trenton? The flow was checked. The tide held back to some extent the onward rush of water. It became almost quiet as it spread over the shallows and the material carried along by the water settled to the bottom of the stream proper and wherever it found its way. Even some fragile articles, as mussel shells, escaped destruction. Here, at such a time, at such a place, an artifact might readily become embedded. Never an artisan who has not lost a tool, so never a hunter that has not lost a weapon.

That under such conditions as then obtained, the same form of artifact should occur upon the surfaces of the ground older than the gravel deposits is nothing strange. The claim so frequently made that to be truly palæolithic they should be confined to the gravel and at a significant depth therein is simply an absurdity. As well ascribe modernity to all pebbles, because single they crop out everywhere. The occurrence on the surface of formations older than the gravel—in this case, the Columbia sands and gravel—of rudely fashioned argillite artifacts does not modernize or “Indianize” them, because their true character is indicated by the few which are *in* the gravel. That such inhumation is accidental is set aside by the irresistible fact that nothing else attributable to man is likewise buried in such manner. Whatever is found is of the one character, and if objects thus fashioned are artificial, and no com-

petent judge longer disputes it, and point to a one-time and very ancient phase of culture in other continents, why not point in the same direction on our own?

After long years of search, as opportunity afforded, and where there was every sort of obstacle to overcome, I have failed to find in the material brought from the present river bed any Indian relic that has suffered erosion to such extent as to render its original outline indistinct. I have axes, celts and arrowheads from the beds of streams, but they show but little difference from those found upland. They are smoother and have a polish that only water could give them. Occasionally, however, it happens that a polished pebble is found, the outline of which is very suggestive. Such as I have seen are all of a size and shape to bring the palæolithic artifact to mind. The outlines of the various surfaces where flakes had been detached could be traced by the sense of touch and sometimes plainly seen. They are water-worn pebbles now, but if these same outlines were distinct and sharp and the surface of the object rough instead of polished, then there would be no doubt as to their artificial origin. The one important question is, are they palæolithic artifacts that have been so long rolled about in sharp sand and water as to lose all their characteristic features since they dropped from the hand of man? If we could but see this material that now constitutes the bed of the river as it was centuries ago, probably our decision would be prompt and explicit rather than as now when the bravest dare but timidly hint at a bare possibility.

If glass, brick and vitreous china can be converted into smooth water-worn pebbles in less than one hundred years, why should not in as short a time, under like conditions, the distinctive features of a chipped implement be obliterated? I do not presume to offer any explanation beyond what I have already suggested, that some objects are ex-

posed to the eroding action of sand and water while others are so lodged between protecting stones that they escape. The material, too, has something to do with it. Glass, brick and china are not as hard as quartz, jasper and some of the argillite, and as these modern objects have fallen into a now comparatively quiet river and lie exposed to shifting sands for an indefinite period, while years ago the palæolithic artifacts were all too likely to be wedged in among large pebbles that effectually protected them.

The bed of the Delaware river, from twelve to fifteen hundred feet wide, at the head of tide water, is a contradiction in one way. An acre or more of pebbles, another of sand and scattered areas of tenacious mud and then wide reaches of coarse or fine gravel. Just why not a fairly uniform mixture of all these materials is not readily explained. The numerous attempts to make the problem very clear only succeed in muddying the situation. Any one given condition of the river bottom is always well marked to its boundaries and there it abruptly ceases. There is no marked overlapping. All the while the water is steadily flowing up or down stream, but the bed of the stream is undisturbed. An occasional freshet, by reason of the greater volume of water and greatly increased rapidity of flow, equal to overcoming the opposing tide, may radically change the surface of the bed, but when the waters recede to normal conditions the varied condition of the bed is again found. The arrangement may be different, but it has been simply the shifting of the conditions; where pebbly, now sandy; where muddy, now an area of pebbles.

It can, I think, readily be seen that the effect upon an artifact of lying for a very protracted period in the bed of the river, would depend a great deal, if not wholly, upon the character of the immediate surroundings. If buried in

mud, it would remain intact; if tossed to and fro, rolling hither and yon over sand, and sand forever passing over it, every angle would ultimately be worn away. Thus, it would be possible for two argillite artifacts, dropped in the river at one time, to become wholly different in appearance in the course of time; one escaping erosion and the other losing every trace of its original faceted surface. Perhaps it is the wiser plan to rule all such out of court, but happily the preserved artifact occurs under such circumstances as to keep alive a doubt as to the justice of such ruling. Ancient man in North America may never be "officially" recognized, but he will never be relegated to the limbo of the visionary or mythical.

In 1892 I discovered the site of a fur trader's post, built in 1640-50, on the lower or southwestern end of Burlington Island. It appears to have been destroyed by fire about a century later. The glass, earthenware, lead, brass, copper and iron and the innumerable odds and ends once in use by the occupants of the place, were found, not only in the cellar hole, but in the sands that for years had here been shifting to and fro with the tides, and occasionally more violently agitated by storms. They had not suffered alike. Many were worn and polished until recognized with difficulty, while others retained their freshness of surface and gave no hint of having been for more than a century exposed to the tender mercies of shifting sands and troubled waters. This was particularly noticeable among the glass and polychrome paste beads, large numbers of which were found.

Shifting our view, then, from the river of to-day to the far greater river of glacial times, it is not difficult to understand that many a smooth pebble, with its lines suggestive of a chipped surface, might have been, in truth, an artifact, and that others, as found in the gravel to-day, should retain

all the outlines of that chipping which converted a pebble into an artifact.

If this present bed of the river, for a mile or more from the head of tide-water, up and down stream, were lifted and shifted to dry land, and then cross sections made of it, as we make them of the great upland deposit to-day, we would find as many and as great differences every few rods in the one case as we do in the other. It is all "gravel" in either case, of the same age and origin, and no distinction should be made, but we are constantly told that in the present great deposit of Trenton gravel that in one locality we have the original laying down of the material, and in another we have it reassorted by a very local cataclysmic disturbance, and so one horizon of sand and gravel is much, or significantly newer than another, and so to the end of a tedious chapter.

The single conclusion that the archæologist can reach is that this Trenton gravel, as a whole, with whatever it contains of traces of man, belongs to a time when the general outlook from the high lands about the valley was materially different from that of to-day, and the lapse of time from that day to this has been sufficient to give the artifacts and bones of Arctic mammals and of man an archæological as distinguished from an historical or pre-historical significance, and it violates rational procedure to relegate all of human origin that we find in the gravel to a later date than the gravel's accumulation and escape the necessity of adequate explanation by calling every stone implement that happens to be vexatiously out of place an "intrusive" object, and staring as fixedly into space as the Sphinx looks over the Egyptian plain, when the character of that intrusion is demanded.

When viewing an exposure of a vast deposit of gravel and wondering what were the conditions that brought these

pebbles, sand, clay and boulders here, the picture we fancy is not a photograph of an actuality. Conception is crude, at best, when we attempt to re-build the past. Marvel, as well we may, at what has been done, we must admit the lacking of a vast array of details. We have a few brief sketches of ancient shores and seas, of one-time forests and faunas, but it is all as is a cemetery to a city.

Sand does not suggest a flood nor small pebbles a disastrous freshet. The quiet methods of the present languid river only seem equal to so insignificant a task, but when a huge boulder is exposed to view, we are no longer mentally inert. We have been contemplating Nature at play; now we see evidence of a real exertion. Not all the ponderous tomes ever printed about the Great Ice Age can make us see a rock, weighing thousands of pounds, floating down the river. As a theory in the class room, "erratics" are within our grasp, but when we find them in the field, they appear so different. They stare at you as fixedly as you hopelessly look at them. That there is a great gulf, between the present and the past, we now fully recognize. The disappearance of a period and appearance of another proves something more than the passing of to-day and the coming of to-morrow. The outlook before the gravel was laid down; what the landscape before it was covered with this pebbly mass; what the fauna and flora; where then the river's channel, we can conjecture, but how unsatisfactory it all is, if our interest is really aroused.

A great argillite boulder, measuring ten feet in length, seven in width and five in thickness, was recently exposed in an extensive series of excavations, near Bristol, Pennsylvania, where the Trenton gravel reaches to the present surface, and often has no distinctly traceable soil above it. It fills now a one-time river bed, the limits of which, in pre-glacial time, were defined by vast deposits of clay. The

coarse gravel and sand were not only over and about the boulder but extended many feet below it. It rested on the gravel as well as in it. It could only have reached its present resting place through the agency of a vast ice field floating toward the sea. No other explanation has ever been offered. That such an occurrence ever happened here may be hard to realize, yet here is an irrefragable proof. As a geological phenomenon, it is but one of many and one of minor importance save for this, which enhances its importance a thousand fold, the association of this boulder with the

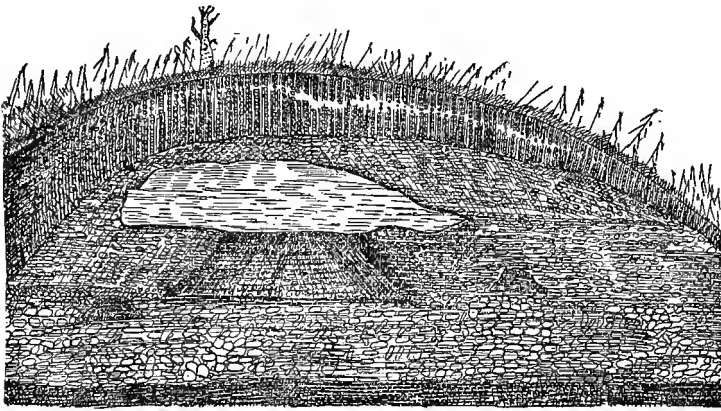


Fig. 2. Boulder in Trenton gravel, near which implement was found.

history of early man. At such suggestion, this huge rock, which excited wonder, now startles us. There is something illogical in this attempting to trace back the career of our own kind. We seem never in the same frame of mind as when studying some fossil shell or bone of an extinct mammal. These are here, of course. Why not? But remains of man; O! that is different. It may be argued until doom's day that it is inherently improbable that man should have been associated with a pliocene fauna, but could

it have been any more difficult than to live, as a low species of *Homo* does to-day, with the fauna of an African jungle or with the marsupials of Australia, survivors of a still more ancient time?

Seldom so favorable an opportunity for searching in the gravel occurs as this has been at Bristol, and the result of frequent visits is one chipped sandstone pebble. Not a splinter of bone or fragment of shell, in thousands of cubic yards of the deposit that I closely inspected. But, is it really not enough? One coin always means the minting of many, but many do not tell the history of the coinage better

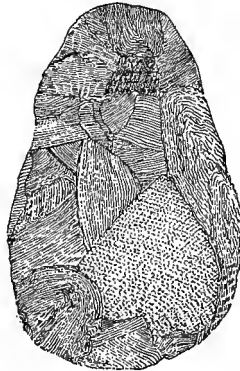


Fig. 3. Palæolithic implement found in situ at Bristol, Pennsylvania.

than one. Show me a single shaving that I know has been peeled from wood by a modern plane, and I will prove to you there was a carpenter, and yet, if this broken stone, broken as Nature never did or could break a pebble, is held up as evidence that a man was here to break it, when or before this boulder came floating across the country and that where the land now is dry was once a bay-like expansion of the ancient stream—if this single stone is held up and we say, here is proof that an implement maker was then in the land, with what derision is the assertion met!

Is science still in its swaddling clothes?

Were the geological history of the Delaware valley the opening chapter of a long series of revelations as to man's career on earth then it might well be held as visionary in the extreme that man, almost primitive in condition, once sojourned here and led a by no means ideal existence, but when we consider that such men, under such conditions, are known to have flourished in many another portion of the globe, the difficulties as to his one-time long ago presence here largely disappear. The Delaware valley is not a prominent part of the record of man on earth, but an humble supplement to an elaborate volume or trifling foot note to a pregnant page.

THE ESKIMO AND ARGILLITE MAN.

It is useless to deny that to a large extent that which comes within the scope of North American archæology is purely speculative. Conclusions are sometimes formed in accordance with the doctrine of probabilities. Our seemingly very natural inference is often rudely jostled by evidence. What we know as history does not always rest upon a rock foundation, and pre-history has at best but a doubtful footing on the shifting sands. As to the relationship of the Eskimo to the Indian, conclusions as to the past are based upon the solitary fact that at present the two people are living in regions that are contiguous. This, of itself, concerns only the ethnologist. The archæologist wishes to know if the present geographical status of these people ever materially differed from what now obtains.

The following from Brinton,¹ bearing on the subject, is given entire. Nothing later is more definite: "The name

¹Myths of the New World, by D. G. Brinton, 2nd Ed. 1876, p. 24. Foot note.

Eskimo is from the Algonkin word *Eskimantick*, eaters of raw fish. There is reason to believe that at one time they possessed the Atlantic coast considerably to the south. The Northmen, in the year 1000, found the natives of Vinland, probably near Rhode Island, of the same race as they were familiar with in Labrador. They contemptuously call them *Skralingar*, chips, and describe them as numerous and short of stature. (Eric Rothens Saga, in Mueller, *Sagænbibliothek*, p. 214). It is curious that the traditions of the Tuscaroras, who placed their arrival on the Virginian coast about 1300, spoke of the race they found there (called Tacci or Dogi) as eaters of raw flesh and ignorant of maize. (Loderer, *Account of North America*, in Harris, *Voyages*).

If these now circumpolar people once were inhabitants of what is now New Jersey, practicing the same mode of life and possessing the same artistic taste and capabilities, then it is incredible that no traces of this handiwork should occur. So far as my own observation goes and experience covers the result of collecting, whatever of bone, slate or steatite that has been discovered, occurred under such circumstances as to warrant its being attributed to the Indians of comparatively recent date. While negative evidence is to be treated with caution and the Indian, with whom we are supposed to be acquainted, is still very much of a stranger, it is obviously rash to speak positively. That is the practice, if not privilege, of the theorist. But the negative evidence to date is so impressive by reason of its prominence that we are led to give it respectful consideration and accept it, tentatively, as demonstrating that the man of the Argillite period, as I have defined it, was nearer an art-less Eskimo than the artistic Algonquin. The conditions, if specialized argillite implements really date back to so remote a time as the dying efforts of glacial activity—when land now dry for undeterminable centuries was subject to overflow by

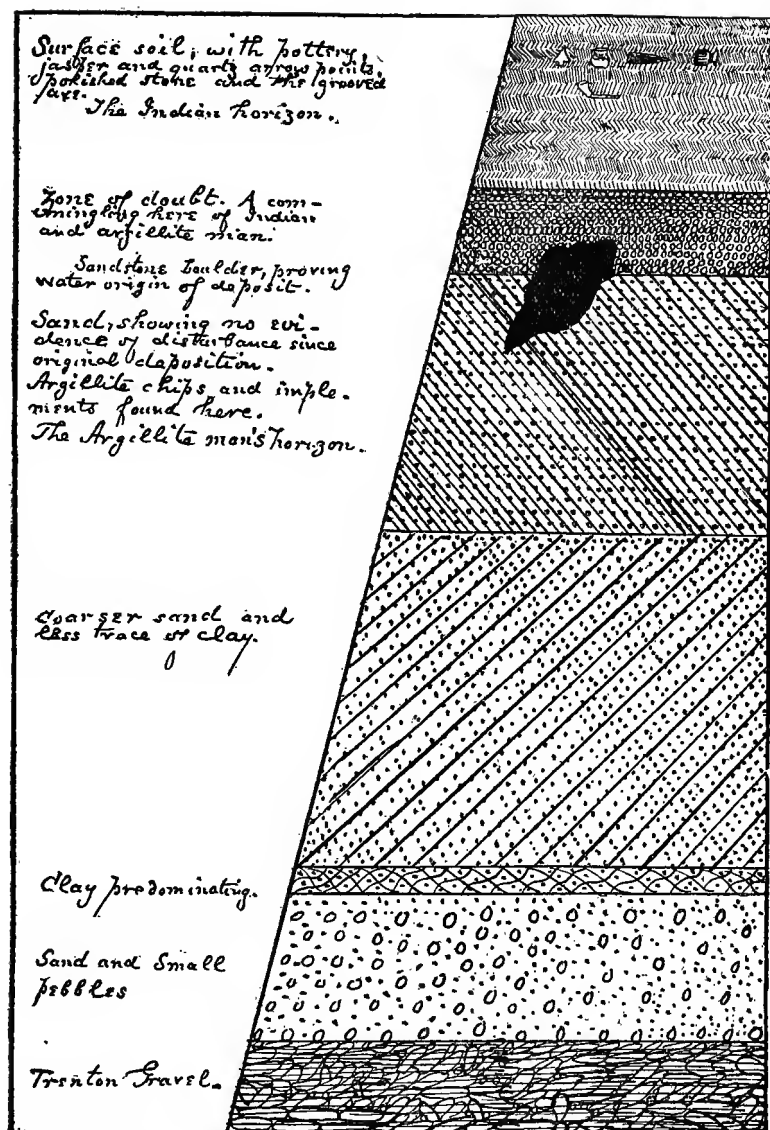


Fig. 4. Gravel and superimposed sand and soil as seen south of Trenton, N. J.

floods that carried sand from distant points—were such that the present Eskimo would be more at home than he could be at present, or at any time during Indian occupation. We do know that arctic animals once abounded. But here, at once, difficulty arises. If bones of arctic mammals occur, why not those of arctic man? This is a legitimate query, but of greater significance is the absence in New Jersey of Eskimo art. It is scarcely conceivable that this had not developed, when we find that Pleistocene art (Europe) and Bushman art (Africa) and the art of the circumpolar regions are one in origin, and certainly Pleistocene art dates back many thousands of years ago. The difficulty cannot be overcome by the convenient suggestion that Eskimo art in New Jersey might all have been destroyed. That is an impossibility, nor can we say that it has been overlooked. Certain etched stones might readily have been incised so long ago as when argillite man flourished on the treeless, sandy plains of central Jersey, but these are not distinguishable from incised stones known to be the handiwork of the later Indians. Probabilities are a necessity with the historian, but the archæologist calls for more substantial matter. His tools and material must be more tangible and equal to the severest strain of logical conclusion.

The suggestion that the argillite man of the Delaware valley antedates circumpolar art calls for too great a lapse of time, and that he lived a life too strenuous for art is to suggest that his career was wholly different from that of all other people, for nowhere is art non-existent. His implements for domestic uses, as well as those for hunting and fishing, might possibly be shown to bear a closer resemblance to Eskimo¹ than to Indian forms, but such attempts have not proved conclusive. Stone implements are

¹Balch. *Comparative Art*. Philadelphia, 1906, p. 35, et seq.

much the same the wide world over. The celt, spear and arrowpoint are cosmopolitan, and few aberrant forms but are approached by an occasional display of invention on part of a savage thousands of miles away. The semi-lunar knife, as an instance, is a characteristic Eskimo implement, but as found in New Jersey, is of so recent origin, if we may judge from its appearance, that it is a strictly modern Indian form, copied, doubtless, from such knives in use where Eskimo and Indian came in contact.

In the absence of a sufficient series of crania¹ from the valley of the Delaware and the coastal plain of New Jersey that are clearly not Algonkin; in the absence of etched ivory and wrought bone,² the relationship of argillite man and the Eskimo must be held in abeyance, but this indefinite status does not make the identity of argillite man and the Delaware Indian more probable. Rather, the Eskimo and argillite man were once neighbors, and while the former has held his own in less favored lands, the latter gave way, at last, either to natural adverse conditions or proved unequal to contending against a superior invading host.

If the Eskimo once dwelt far south of that people's present range; if New Jersey was once much like what Labrador now is, then it is not difficult to realize that the two people were near neighbors, as they have been for an indefinite period since, when all come within the scope of the term "Indian," that are not distinctly the circumpolar race. My own contention has always been that the earliest people in the Delaware valley i e., post-palæolithic, were much like the Eskimo in way of living, because of geological condi-

¹The value of craniology in determining the identity of a people is likely to be overrated. Certainly, there is not a fixed Lenni Lenâpè type of skull. They range from extreme dolicocephaly to brachycephaly; while minor characteristics vary indefinitely.

²Walrus remains occur in superficial deposits in New Jersey.

tions that seem to have then prevailed, but not that they were identical.

If palæolithic man is the ancestor of the Eskimo, as is probable, then the argillite man of the Delaware valley and of a considerable extent of the Atlantic seaboard must be traced to him, as a people whom circumstance never drove from their original abiding place. Contemporaries of their neighbors of the north, but only remotely consanguineous; a people that had a long career, but not an eventful one, and finally disappeared either long before or when the southern Lenâpé appeared upon the scene.

If the sea coast of New Jersey, from Sandy Hook to Cape May, was restored to its condition of some centuries ago; if the firm land that has disappeared and the primeval forests that covered it was again in existence, the archæologist would find satisfactory evidence in abundance of the one-time habitation of man who flourished here, after his fashion, ages anterior to the dawn of history. That such conditions as fertile land, a varied fauna, dense forests and a moderate climate should attract humanity as yet untrammelled by the exactions of a depressing civilization, is not strange, and how long the region was populated, and by no means sparsely, is attested by the abundance, extent and significant depth of the shell heaps that still remain.¹ They afford us irrefutable evidence of the changes that have occurred since the first fire was built and shells began to accumulate at some chosen point. High, dry, habitable land then, which now at the lowest stages of the tide are still beneath the water. The attempts that are frequently made to minimize their importance as bearing upon the question of man's antiquity fail for the simple reason that we have no evidence that the subsidence of the land has been con-

¹Abbott. Primitive Industry, Salem, Mass., 1881, p. 520.

tinuous and at a uniform rate. We are asked to believe that century after century and year after year there has been a steady, uninterrupted, clock-work progression towards a given end, but demonstration of this is lacking. Theory should not always be conducted to the highest seat when councils are convened. Let facts be heard occasionally, if only to break the monotony.

These shell heaps, so far as the writer is aware, are to be attributed to the Indian, unless we except certain ones where the late Dr. Samuel Lockwood, near Keyport, N. J., found only argillite and an absence of pottery. Certainly, so far as yet explored, they contain jasper and quartz arrow-points and knives and fragments of pottery, and a good deal of this so thin and neatly decorated that it indicates a very late Indian occupation of these shell heap neighborhoods. But as a whole, extending for hundreds of miles near the shore line and back into the country, but where salt water still reaches, these vast deposits of shells, gathered by man, indicate a lapse of time that is not readily reckoned by years. They indicate that the Indian gradually overspread the present area of the state and gained a foothold on every rod of available land within sight of the ocean and along all the tortuous rivers that, after flowing for miles through dark, unbroken forests, reached sunlight and the sea.

Not everywhere, however, is quite the same story told. Time has not brought about quite the same change along the entire coast. It was not always a matter of ever-shifting sands. The land may be sinking, as has been stated,¹ at

¹"Measurements agree in giving the rate of subsidence as about two feet in a century, or one-quarter of an inch a year. The whole amount of this subsidence is not known; it must, at least, equal the whole depth from high-water mark to the lowest points at which stumps and roots of trees have been found in their places of growth. This **** is seventeen feet, and it may be more." Cook: *Geology of New Jersey*, 1868, p. 362. See also Abbott: *Primitive Industry*, Salem, Mass., 1881, p. 478.

a given rate per century, but this has not had the same effect at all points. The envious sea has not been uniformly successful in destruction of dry land. Traces of very old New Jersey still look out upon the ocean. Near the southern extremity of the State, at Five Mile Beach, now better known as Holly Beach, Wildwood and Anglesea, there stood some years ago the remains of a one-time extensive and truly magnificent forest. This "beach" by reason, it may be, of its more tenacious foundation of indurated clay, defied the encroaching sea, and retained, when land for miles about it had disappeared, the features of that main land of which it was at one time a seaward extending continuation.

The principal feature of this trace of a forest is, or was, its magnificent hollies (*Ilex opaca*). One measured twenty-three inches in diameter and was fully forty feet high, and many another, though smaller, gave every evidence of equal, if not greater age. There is always an "ear-mark" of age in a forest as a whole that single trees do not always have. We can, when walking on an ancient forest floor, feel an antiquity that is not always revealed to the eye. There is many a patriarchal dwarf in every community of giants. We are too apt to be impressed with great dimensions and never inquire if the impression includes all the truth. One monster of a tulip tree I knew of was looked upon as a relic of a misty past until it was felled, when the rings of annual growth told a straight story that ended the fairy tales of my neighbors.

Hollies are trees of slow growth and so, too, are the red cedars (*Juniperus Virginianus*), and here at Wildwood stood one, the trunk of which was four feet in diameter. Such cedars now are very rare, if indeed there is still one standing. It towered to a height (estimated) of one hundred feet. There was nothing to show that it had been

favorable by Nature beyond others of its kind. It simply had escaped the vicissitudes of flood and fire, and a lusty sapling when only the lonely savage had passed that way, had flourished until the white man's coming doomed the forest and all that Nature had done to make the land beautiful, to destruction. While a specimen brick tells little of the house that has been built of such, a cedar like that mentioned gives us more than a glimpse of the forest that once crowned this highland by the sea. Such trees are shown not to have been an exception, from the fact that many of like dimensions have been discovered, lying in what is now a marsh.

"Mr. Charles Ludlam¹ counted seven hundred rings of annual growth in a tree which was alive when cut down. Dr. Beesley counted ten hundred and eighty in a stump; and J. Diverty found one thousand in a log dug up out of the swamp earth. * * * * The average size of the old trees was from two to three feet in diameter; those of four, five and six, and even seven feet, were found, but rarely." The above refers exclusively to the white cedar (*Chamæcyparis thyoides*).

The late Prof. Cook further remarks: "Trunks of trees are found buried at all depths beneath the surface, quite down to the gravel. * * * * Tree after tree, from two hundred to one thousand years old, may be found lying crossed, one under the other, in every imaginable direction."

This interesting condition has a distinct bearing on the archæology of the same region. The gravel or hard pan proves to have been the surface when man using only (?) argillite implements was the coast dweller of what is now New Jersey. That is, argillite of undoubted artificial shaping; rude yet not questionable as to being designed and not fortuitous, has been collected, where no trace of the

¹Cook: Geology of New Jersey, 1868, p. 356.

Indian, the aboriginal potter, has been discovered. Even if mere chips of argillite had been found at this horizon, it would have been significant, for here the rock is not found, the drift not reaching across the State but only down the valley of the Delaware. Such specimens as I have seen were identical in all respects with those of the sands that underlie the present surface soil in the immediate valley of the Delaware river.¹ The results of exploration under favorable circumstances clearly indicate, at least to the writer's unqualified satisfaction, that when this now buried forest was flourishing, and long centuries before the giant cedar of Wildwood was a sapling, and possibly when Five Mile Beach was a part of the main land, the historic Indian had not developed here or migrated from elsewhere, but man was present, and possibly so long ago that he did not witness even the beginning of this, "the last of a succession of such changes which have left their permanent marks upon this portion of the State; and all of them only carry us back through the last, and what has usually been considered the most insignificant, of all the periods of geological time."²

Idle, indeed, is all attempt to estimate in years such a sequence of event. There is absolutely nothing to indicate how long these forests flourished before the day of their destiny dawned. Forest may have succeeded forest, as they have done since, and the beginning of the decline may have dated centuries before the destruction was complete. The subsidence, whether ten, twenty or more feet, and the depth is not uniform, can never be shown to have been without intermission, and if apparently of measurable time within the historic period, it does not indicate that at the beginning it was not very gradual and less than the estimated quarter

¹Archæologia Nova Cæsarea, II., p. 28.

²Cook: Geology of New Jersey, 1868, p. 357.

of an inch a year. As Dr. Cook has well said, when viewing this sunken forest in Cape May, "we soon come to reckon the time of its accumulation by hundreds, or even thousands of years."

Then came the Indian upon the scene. The shell-heaps tell his story, but no hint of a date is discoverable. They witnessed many a change. "There is a tradition," writes Dr. Cook,¹ "derived from the Indians that trees formerly grew on the bank which is now Fishing Creek shoal." They saw the land of their forefathers disappear; that we know; and their own canoes floated where their fathers had chased the deer. Doubtless, their traditions covered many a change of which no trace is left, and lacking this, however earnestly we strive to rebuild the past, we all too likely wander wide of the mark, but the deeply-buried argillite and the potsherd and jasper of the shell-heaps do not lead us astray.

Still, it is hopeless to convey to printed pages the impressions that the archæologist afield receives. The palæontologist is more fortunate. The bones that he sets up in the museum case excites wonder, but never doubt. But never a trace of man's antiquity is exhibited but it excites a doubt and fails to interest. The truth is, the traces of other peoples of other days must be seen where these people left them. Such objects speak to the individual, but not in a communicable way. Language is limited. It gives names to objects, but fails when attempting to repeat all that these objects suggest, and most unfortunately, when removed, the greater part of all they stood for disappears. The obelisk in Central Park tells no story. When first erected it was as eloquent as it now is mute. That a forest, as it was slowly buried, buried traces of a race of men older than itself is a startling assertion, but in those

¹Cook: l. c., p. 346.

rudely chipped flakes of argillite rests the fact. How vain, then, to deal with numbers when considering the lapse of time twixt the first flowering of these old-time trees and the fall of the last monarch of a pre-historic forest. Prof. McGee may well say:¹

"The time has not yet come for fixing the date of man's appearance on the Western Hemisphere in terms of geologic periods, still less in terms of years. The researches of Cook, in the Department of Agriculture, seem to indicate that the banana and other plants were cultivated in America before they passed to the Orient, and suggest that Easter Island may have been a way station between Polynesia and our southern continent, while the researches of Boas and others in the Jesup North Pacific expeditions indicate that traditions have migrated from America to Asia; and these indications suggest a high antiquity for the red race."

This for the "red race," the pre-historic and historic Indian, but what of his forerunner?

The claim that he is a myth, it appears to me, has not been sustained. Only by violation of all rules of evidence can every trace of man in New Jersey be referred to the Indian. In the valley of the Delaware, along the Atlantic coast and over the intervening land, there are abundant evidences of man's presence at a date too remote to be expressed in figures. It is where we must deal with time relative and not time absolute; nor are we dealing necessarily with one and the same people.

MORTUARY CUSTOMS.

When Samuel Smith, in 1765, published his "History of New Jersey," he did not state, in his preface, wherefrom was derived whatsoever he had to say of the Indians, ex-

¹Communication to New York Herald, 1907.

cept such matters as were then historical and of comparatively recent occurrence. He gives us a plain statement that evidently was wholly satisfactory to himself, and which no later writer has had reason to dispute. Certainly, archaeological investigation, unknown in his day, has thrown no doubt upon the substantial accuracy of what he records.

On page 137 of his work,¹ we find: "It was customary with the Indians of West Jersey, when they buried their dead, to put family utensils, bows and arrows, and sometimes money (wampum) into the grave with them as tokens of their affection. When a person of note died far from the place of his own residence they would carry his bones to be buried there; they washed and perfumed the dead, painted the face and followed singly; left the dead in a sitting posture and covered the grave pyramidically: They were very curious in preserving and repairing the graves of their dead."

It is needless to remark that all such carefully tended graves have long since disappeared. The surface of the ground has renewed its original appearance and only by chance do we discover what little remains of these elaborate interments. The skeletons are no longer intact. Discolored earth and whatsoever proved imperishable among the "tokens of affection," as pottery, wrought jasper and polished stone, now alone indicate many a grave. The point that well may be raised is that the disposition of the body, as to posture was not uniform. Many a dead Indian was buried lying flat upon his back. In the present flood plain of the river as well as upon the higher ground that skirts its eastern border, the graves vary in this respect. It might be claimed that the bones became displaced, as the body decayed, and became so re-arranged as to deceive us as to

¹The History of The Colony of Nova-Cæsaria, or New Jersey: By Samuel Smith, Burlington, in New Jersey: MDCCLXV.

the original position of the body, but this is shown not always to have been the case, by the disposition of the articles interred at the same time and the correct relative position of each bone of the skeleton. No confusion in this respect and uniformity of level maintained. A trench evidently, and not a hole had been dug.

When skeletons are found in what we may call grotesque positions, it does not mean that the corpse was that of a

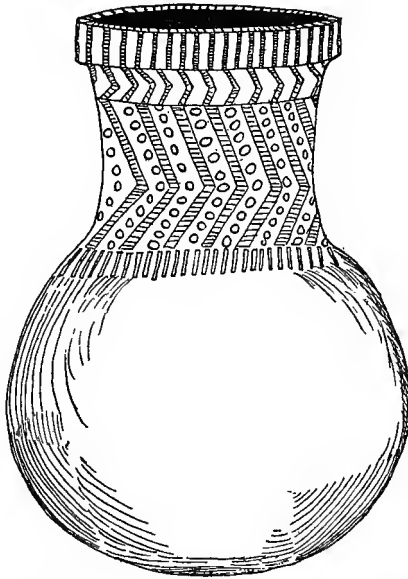


Fig. 5. Highest development of Delaware Indian pottery and characteristic ornamentation.

despised person and that the body was thrown head-foremost into a hole and covered with earth. Such skeletons were evidently in a sitting posture originally, and disturbance due to natural causes explains all. Imagination has no place in graveyard investigations. Difficult as it is to deal soberly

with the living, the dead surely are entitled to be treated as matters of fact and not made the butt of a riotous fancy.

It is not improbable that much depended upon the prominence of the deceased, as to the details of burial, but more attention is likely to be given to the actual funeral ceremonies, and now the grave of the chief and that of the least important villager are indistinguishable. The fact, however, that such traces of burials as occur near the surface, and are discovered by chance oftener than through efforts in such direction, are not necessarily the most recent

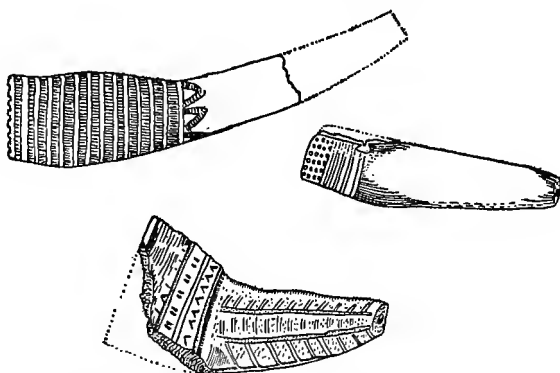


Fig. 6. Clay pipes for smoking tobacco.

interments, for we know nothing of the changes that have taken place in the more than two hundred years since these graves were dug. To be near the surface, now, does not mean that the body was not deeply interred, *i. e.*, not laid on the surface and earth heaped over it. Since the deforesting of the land, the surface has been shifted indefinitely. Hill-locks have been worn away and hollows filled, and we have no guide to the conditions at the time of inhumation. Whether distinctly within the undisturbed sands beneath the present soil or in the latter is of more importance, but nothing points to comparative antiquity except where there

is distinct stratification above the body. Unless this process of stratification is continuously in operation and may be but a matter of yesterday, the remains found beneath well defined layers of sand of different texture must be of great significance in its bearing on the general question of antiquity. The degree of preservation of a skeleton depends wholly upon the character of the soil immediately surrounding it, and so many an Indian interment of two hundred and fifty years ago may be now little more than dust, while one of twice that lapse of time may be fairly well

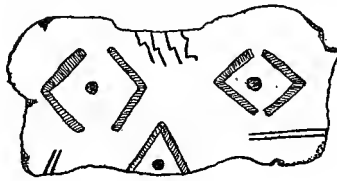


Fig. 7. Potsherd with unusual ornamentation.

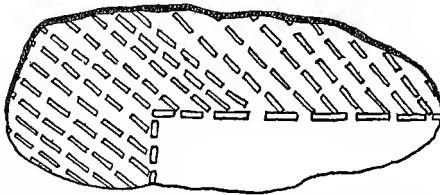


Fig. 8. Potsherd with unusual ornamentation.

preserved. In fact, the disposition of pottery and implements in the ground are best explained as having been intentionally associated with a body, every trace of which has absolutely vanished. It is this that suggests how very long ago, the Indian began burying his dead, in certain localities. The abundance of relics is not as popularly supposed indicative of a village site, but of a cemetery.

That the perishable belongings of the deceased were destroyed by fire, and animals ordinarily used as food were

sacrificed, and the accumulated ashes thrown in the grave before filling it, is apparent, but all this ceremony concerned the living far more than it referred to the dead. It had no special significance, for the impression that the "spirit" of the departed required the "shade" of his personal effects in "happy hunting grounds" was never an Indian concept, but the wild conjecture of over-zealous proselyters, whose imagination ran away with them.

As a whole, the burial customs of the Indians of New Jersey, if we may judge of all by what we find in the valley of the Delaware, are without interest so far as throwing light upon the lives of these people. That there was not uniformity in the burial custom is about our most important fact, and it has not as yet proved of the slightest value. Choice of location would seem natural and apparently it was sometimes exercised but by no means invariably. The present open field, the still undrained marsh, the sand dune; wherever, in fact, a wigwam might have been erected, there a grave often proves to be. The death of the inmate and the burial of the body took place often on the same spot. The grave was dug, the body buried and the wigwam burned; this is the whole story.

In the immediate vicinity of the Indian's permanent towns, and there were many such in New Jersey, naturally there would be a general place of burial. Such cemeteries, in early Colonial days, were respected, but the increased demand for land soon resulted in encroachment upon their boundaries and now they are obliterated. An occasional relic is turned up by the plow or perhaps a skull, but of the past and all this relic and this skull really signify, who shall say? "Lost is lost, and gone is gone forever."

That the Indian, however, was not devoid of all sentiment is apparent from what has been quoted from Samuel Smith, and near a century later we find it reported by Barber and

Howe,¹ they in turn quoting from an unnamed author, that on the bank of the Rancocus creek, and not far from the Delaware river, there was a "tumulus formed by the graves of the Indians. There they used to be brought in wickers on men's shoulders, and were interred in sitting postures, surrounded and defended by upright wickers."

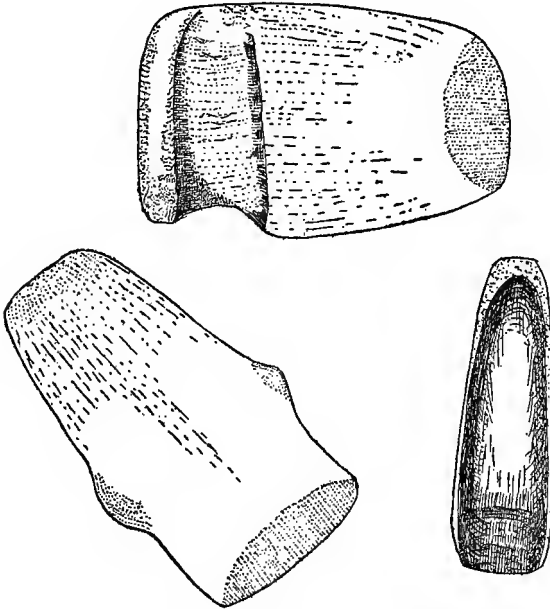


Fig. 9. Axe, Celt and Gouge of Delaware Indians.

The occurrence of burial mounds in New Jersey have been frequently reported, but in every instance of which I have knowledge, it was a natural hillock or out-reaching ridge, with sufficient clay at its base to preserve it against the wear and tear of the elements. Such a feature in a landscape

¹Historical Collections of New Jersey: Barber and Howe, 2nd Ed., 1856, p. 122.

would not escape an Indian's notice, and its utilization as a burial place would be a very apt suggestion, but that a tumulus was ever deliberately built is open to question, although earthworks for defense are recorded by those who had seen them and questioned the Indians as to their origin and purport. It can be said safely that the Delaware Indians were in no sense mound-builders, but appear occasionally to have been mound-dwellers.

An examination of one such natural hillock gave evidence that it had been palisaded near the top and a house erected

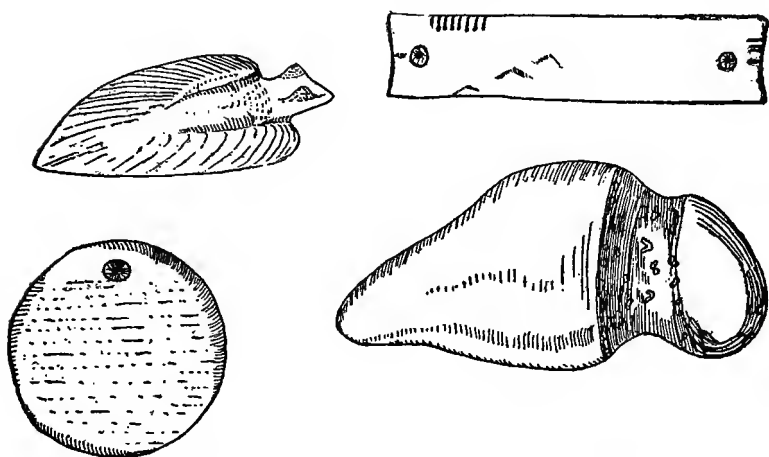


Fig. 10. Club-head and ornaments of Delaware Indians.

within the enclosure. The earth showed the effect of long continued fire in one limited spot. No handiwork of the occupants was found except innumerable potsherds. The place appeared to have been burnt and never re-occupied, and no trace of a burial could be found. It is probable that a great many reported "mounds" were such places as I have described, and yet the counterfact of such burial places as that upon the Rancocus creek is not to be overlooked. That

Indians should desire to be buried on its banks is not strange. The whole valley of the stream was almost one continuous village. Nowhere, except in the irreclaimable marsh, are relics of the aborigines wanting. The sands are full of them. Objects of argillite are more abundant than those of jasper and quartz, and are so mingled with pottery and implements of known Indian manufacture that no distinction can be drawn between later Indians and the "argillite" man, unless indeed there is some significance, in fact, that in some areas and deeply buried in sand, are rude argillite knives and points and *an entire absence of pottery*.

The single feature of archæological interest in connection with the mortuary customs of the Indians of the Delaware valley is that of the vast numbers of burials that have taken place. Varied, as a whole, and the conditions of hundreds having been noted, it is evident that what are now to be traced somewhat vaguely or exhumed entire and in excellent preservation, are but a trifling fraction of the unnumbered host that have literally turned to dust, if what are looked upon as "inferential interments" are such, or those indicated by the position of objects that suggest their having been placed where found when a body was laid away. No single grave, when brought to light, pointed to a remote antiquity. It was again an instance of that general impression derived from years of familiarity with the conditions as a whole; an impression that must be derived directly from the field, and cannot be transmitted by pen, pencil or word of mouth.

Sepulture was simple. It was not a feature of the people's career that was at all prominent. It was an unavoidable necessity that was never glorified with elaborate ceremony. Therein their wisdom exceeded that of their successors. Whatever monuments they might have raised were painted wooden posts that have long since disappeared, and there

were no stones set up to mark the last resting place of king, chief, priest or prophet.

If no single graves of Indians bear out the general contention of the antiquity of these people, what of those traces of the human skeleton which are found singly; a skull, it may be, a tooth, or some one single bone, or even a water-worn fragment of a bone? To refer all such accidental finds to some disturbed Indian burial may seem very rational, and the only natural explanation, but not always is such apparently obvious conclusion warranted. *The conditions under which an object is found is of more importance than the character of the object itself.*

When modern crockery, coins and handiwork generally of the European is found in glacial gravel, in stratified sands, and associated with relics of the Indian; when the surface of the river's valley to the depth of twenty feet or more shows a promiscuous gathering of the belongings of the aborigine and early settler and bones of the mastodon, peccary and giant beaver, then it will be time to set aside the "law" as I have laid it down, that of the significance of circumstance. This stand of mine may not be in accordance with the canons of Museum curators or of Bureau administration, but it accords with the far older canons of common sense. Such traces of the human skeleton do occasionally occur, and the condition of the bone itself as well as the circumstances of occurrence often justify the ascription of an antiquity greater than an Indian grave.

An example of such single finds is that of a fragment of a frontal bone, at a depth of three feet, nine inches, in compact Columbia gravel. The locality is one of considerable elevation above the Trenton deposit of gravel and almost a mile inland from the river. Looking at a perpendicular escarpment of this preglacial deposit, I noticed its uniform surface was disturbed by a curved line of yellowish material,

and closer examination brought to light the bone in question.¹ Since its discovery I have determined more than one fact of importance. At the time I made my measurement of the depth at which the specimen occurred, I was not aware that the surface of the field had been removed to a depth of two feet of the Columbia gravel and all of the surface or vegetation-sustaining soil, which was probably a foot in depth. Now, taking this into consideration, the bone was really almost six feet in the compact ferruginous sands and small quartzite pebbles that constitute here the so-called Columbia gravel deposit. While there was no distinct stratification, as of different materials and as we find it even in the Trenton gravel, there was a compactness so marked that it seemed next to being a really solid sandstone; so compact that the preservation and extraction of the bone was one of great difficulty. Hence, all possibility of the bone being an intrusive object was eliminated. These facts, except that of precise depth, were forwarded with the specimen to the museum where it is now preserved, but neither statement nor specimen were accorded even the most perfunctory attention.

Later the specimen was examined by Dr. Hrdlicka² and his single comment is that it gives no indication of its racial character. There is a crumb of comfort here, in that he does not show that that it is necessarily Indian, and the conditions under which it was found does demonstrate either that the Indian is vastly older than has hitherto been supposed or that it is a portion of a skull of that pre-Indian race, the existence of which Dr. Hrdlicka labors so strenuously to disprove.

¹Now in Peabody Museum, Cambridge, Mass.

²The *Crania of Trenton, New Jersey, and their Bearing upon the Antiquity of Man in that Region*. By Ales Hrdlicka, *Amer. Mus. of Nat. Hist.*, Vol. XVI., pp. 23-62. New York, 1902.

In other words, if this fragmentary, frontal bone of a human being was a fragment of the skeleton of an extinct mammal or of one no longer living in New Jersey, its acceptance as added proof of the one-time existence of such animal here would be a matter of course and excite no comment; but to hint at "fossil" man in New Jersey disturbs the equanimity of the Museums and Bureaus, and peace of mind is secured at the expense of truth. All pertaining to humanity that by position in the earth is seemingly old, must necessarily be intrusive, and so, modern. This is the official dictum until the glory of undisputed discovery is all their own.

This frontal bone, as I discovered it thirteen years ago, confirms to my mind, as no other discovery of others or by myself ever did, the antiquity of man in the valley of the Delaware and, too, of the existence of that pre-Indian people whom I have called "Argillite Man."

THE AMERICAN SAVAGE.

It is well known how rapidly and ineffaceably affected an inferior race becomes when contact with superiority is established. The unfortunate weakness of all mankind to reach beyond the limits set by Nature leads the savage to emulate all the vices of those more advanced in culture, and so become less than their former selves and widen the gulf between the two, as races. This was conspicuously true in North America promptly after the continent became known to Europe, when its fanatical, covetous and hypocritical hordes raided practically the entire Atlantic coast. It was really savage pitted against savage, the difference being that one phase of the savagery was honest; the other, not so.

It is with this pre-European-contact savage, the "Indian" that was the product of the country as much as are its for-

ests and the fauna that wanders through them, that the archæologist is concerned; the savage that in 1621 inveigled the Dutch colonists brought hither by Cornelius Jacobse Mey, to bring their boat into Cooper's creek, and there murdered every soul on board. Later the real savage was occasionally seen when invasion of their homes was resisted, but the redskin with a rifle is not the original savage with his bow. The iron tomahawk excites no interest, but the grooved stone axe never ceases to be suggestive. The Indian of history bears much the relation to the savage of pre-history that horses, cattle and sheep bear to their wild progenitors.

No problem concerning these people has been so vigorously discussed, and all else, in fact, has been too much lost sight of, in the endeavor to determine the origin of this so-called and mis-called Indian. I am fully convinced, after years of investigation, not of their origin, but of their activities when *de facto* inhabitants of the region, that much obscurity would have been avoided had tradition, as it was received by the missionaries, been treated as such, and not as history, as we distinguish between the two, and so the element of time not allowed to sway their thoughts in one direction or another.

Those who, like Heckewelder, accepted tradition as veritable and linked it to ordinary time estimate as he might the history of his own country, were, of course, sincere in their conclusions, but sincerity does not affect facts and make error less erroneous. These pioneers in Indian history were not archæologists. They knew nothing of the antiquity of the earth and of man. They were fitted and fortunate in their opportunity to record tradition, but we, to-day, are not called upon to place the same value upon it as they did.

The valley of the Delaware, as we have already seen,¹ comes well within the scope of the Indians' traditional history. From it it would appear that of all the North American Continent so vast an area as Pennsylvania, New Jersey, Delaware and Maryland and southern New York were unknown to the continent's native race for untold centuries, and the very last and very recently invaded and occupied. The stone implements found in the single valley of the Delaware refute this and bear counter-testimony wherever found, and as one flint flake deeply buried bears testimony that cannot be shaken, what of this wavering, uncertain, vague prattle of old men when the two conflict? Safety lies in the testimony of Nature's records, while lies rest all too safely on the tongues of men.

Prof. N. H. Winchell² has recently published an instructive and delightful essay on the "Aborigines of Minnesota," and as his studies have carried him far beyond the confines of that State, I take advantage of his researches so far as to quote in part his reference to the Lenni Lenâpè and Heckewelder's history (or traditions) of them.

Prof. Winchell prefaces his article, as follows, and this succinct statement of archæology to date surely renders it highly improbable that the valley of the Delaware was "out in the cold" until some four or five hundred years ago.

"In order to clear the field at the outset by the removal of any obstacles that we may have inherited from earlier conceptions of the aborigines, it will be well to repeat some of the important results that have been reached within recent years, viz.:

"1. The origin of the ancestors of the Indians was so remote that nothing yet discovered indicates its date or the source from which they came.

¹Archæologia Nova Cæsarea, II., p. 54.

²The Prehistoric Aborigines of Minnesota and their Migrations. By N. H. Winchell. Popular Science Monthly, Sept., 1908.

"2. There are between fifty and sixty Indian stock languages, some of which are as distantly related as the languages of the various Aryan nations, but most of which are as distinct as the English from the Semitic.

"3. This shows that the aborigines, if they came at all to America, must have come from a great many directions, or that their coming was so remote that they must have developed these differences amongst themselves by long periods of isolated residence in North America.

"4. The Indian stock languages can not be connected, at least have not been connected as yet, with any convincing bond of relationship, with either European or Asiatic languages. The Eskimo are here not included, as that stock ranges from Greenland through North America into Siberia.

"5. The aborigines, therefore, are indigenous to the soil of America in the same sense that the Mongolian and Caucasian are indigenous in the lands of the Eastern continent."

Such being the conditions as applied to the entire continent, it is necessary to look cautiously at tradition concerning a limited area which is plainly not in accord with such established general conclusions, and when, too, the conditions of that limited area are flatly contradictory so far as the tradition is concerned. The original peopling of the continent was so remote that every vestige of it has disappeared and the development of the Indian as such is one of this continent and reflects nothing of any other continental area. Here, then, is allowed the time necessary for all that I have endeavored to prove with reference to the valley of the Delaware.

That portion of the traditions of the Lenni Lenapè, as recorded by Heckwelder, that is of foremost interest and of marked significance is to when these people did finally reach the land east of the Alleghanies, it was not the unopposed entrance upon an uninhabited country. They had

to fight their way. If this is true, and it is at least reasonable, then what of the pre-Lenâpèan folk who were in the valley of the Delaware and westward to the Alleghanies and eastward to the Atlantic ocean?

Concerning traditions in general, Prof. Winchell remarks :

"There are many traditions that relate to the migrations of the native tribes within the United States. I will call your attention to but two of them. These relate to the great movements that are here discussed, but they are confirmed by several others that supply contributory details, and when taken all together their force amounts almost to as great a body of evidence as if the events were a matter of history.

"These two traditions have been accepted by all archæologists as trustworthy testimony, as far as the Indians could communicate a history of past events. The only differences of opinion that have appeared pertain to the interpretation and application of the traditions themselves.

"One of these two traditions recounts the hostile incursion of the Lenni Lenâpè, an Algonquin tribe or group of tribes, into the region west of the Allegheny Mountains, their conflict with the "Tselaki," a word which has been corrupted into Cherokee, and with the Allegewi, a word which is perpetuated in the term Alleghany, and their final settlement, under the name Delaware, in the eastern part of Pennsylvania and in New Jersey, together with some further migrations toward the east. * * * * *

"John Heckewelder, a Moravian missionary with the Delaware or Lenni Lenâpè in Pennsylvania, gave the first printed account of the hostile incursion of the Lenni Lenâpè against the Ohio mound builders. It is published in Vol. XII. of the memoirs of the Historical Society of Pennsylvania, in 1818. He took it from the relation of the intelligent Indians. With some abbreviation it is as follows :

"The Lenni Lenâpè (according to traditions handed down to them by their ancestors) resided many hundred years ago in a very distant country in the western part of the American continent. For some reason they determined on migrating to the eastward, and accordingly set out together in a body. After a long journey, and with many long stops on the way, they at length arrived on the Namaesi-sipu, which by Mr. Heckewelder is translated 'Mississippi' * * * * *

"The tradition continues further, but is not essential to this inquiry except so far as it shows that the Lenâpè finally spread themselves into the eastern states, establishing new tribes, and into Virginia and Maryland, and states that these younger offshoots recognized their relationship by calling the Lenâpè their grandfathers, this proving a confirmation of the recentness of the southern Algonquin tribes."

Who then, it may be asked, were these Allegewi? They proved a formidable opponent to the progress of the Algonquin Lenni Lenâpè, according to their own showing and it is not probable that they were an Algonquin tribe that foreran the Lenâpè and were congregated about the Alleghany Mountains and did not wander far away. There is nowhere more easy traveling and fewer obstacles than between the Susquehanna and the Delaware rivers, and these Allegewi, about which Heckewelder found much to record, were without doubt actual possessors and occupants of all the territory twixt the mountains and the sea. As a resident people, long established, they had the advantage over an invading foe, yet in the end they were overcome and either were annihilated or absorbed. There is no reason to believe that they were so far inferior that the victors should not have enslaved their women, if they did not fraternize with the men. This as it may be, it throws much light, if the tradition be true, on the history of the Delaware valley. Were the Allegewi

of Heckewelder's narrative the argillite men of that river and of all the country westward to the Susquehanna? This is the whole matter in a nutshell. The condition of the valley, as exploration has abundantly shown, can best be explained by successive occupation, and if we are to accept tradition, then this, preserved by Heckewelder accords completely with the testimony of the traces of early man in the valley. Tradition, verified by physical conditions, is of value equal to authentic history.

The Allegewi, brave and persistent, fell back finally, as the Lenâpè pressed forward and wrested the land from their opponents, the prior occupants, who were doubtless a less advanced people, and at no one point may have been numerically as strong; a people content with the advantages that Nature provided, and not warlike until roused by the invader.

Following this line of attempted explanation, we have, then, the man who utilized the easily wrought argillite in the making of his tools and whatsoever he required for hunting and fishing, and it may be many a simple blade that suggests agriculture may have been made and used before the Indian began to raise his crops of maize, melons and beans; the man whose mentality was so far undeveloped that he was wholly utilitarian and in no sense esthetic; a man in whom art had not yet blossomed as it has with the Eskimo and had with the Eskimo's ancestor, Pleistocene man. This pre-Indian of the Delaware valley was a savage, indeed, but probably a powerful one, yet leading the lazy life of a well-fed beast. That his personal possessions were utilitarian and to but slight degree, if at all, decorative or symbolic, is inferred from the fact that no objects of the latter character have been found that could reasonably be referred to the Indian's predecessor rather than to the Indian. The art instinct may, however, have shown itself in

etching rather than sculpture, for large blade-like flakes of argillite of no very definite design, but clearly artificially shaped, have been collected that were unmistakably incised in a suggestive way, but too vaguely to determine the design. These incised lines, broken and often weather-worn

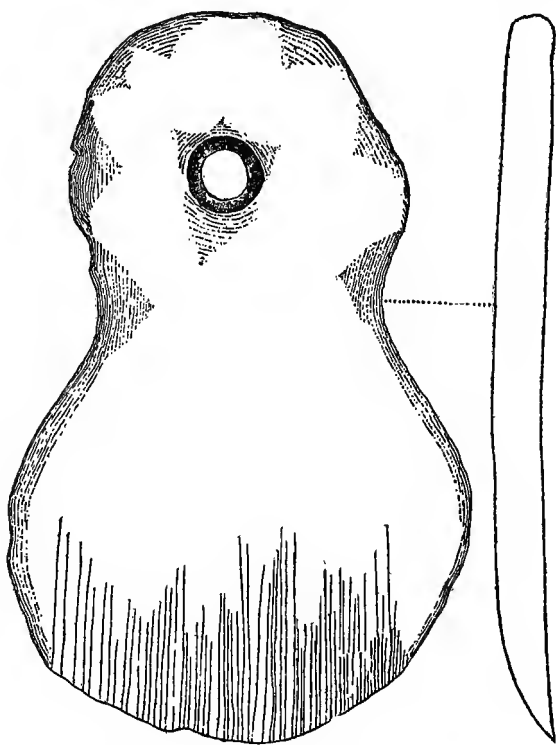


Fig. II. Sandstone Hoe, perforated, of Delaware Indians. A rare form.

until scarcely traceable, have all the appearance of an attempt at ornamentation of the stone or to depict some special object. But all is as yet too indefinite to warrant any conclusion being drawn. It is not likely this argillite man was devoid of all art, but then we are dealing with the almost

primitive humanity of thousands of years ago, and have scarcely a foothold in any direction save that of the single fact of his one-time existence. Furthermore, as has been pointed out by many authors, time and time again, all the stone implements that are now found are not necessarily referrible to the historic Indian. As well assert that all

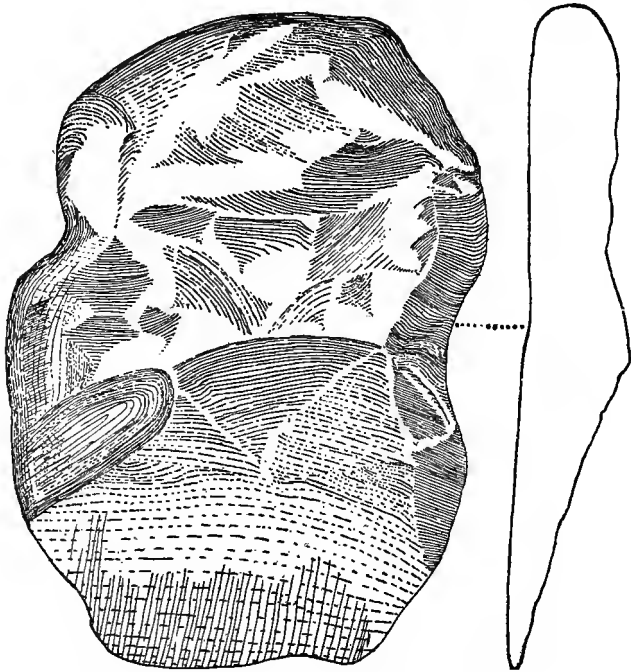


Fig. 12. Argillite Hoe of Delaware Indian. Simplest form of this implement.

Colonial furniture and utensils still in New Jersey are of English origin, and none Dutch or Swedish, when we do know that these people antedate by more than half a century the English in the Delaware valley.

It is, I claim, something more than reasonable conjecture, more than specious argumentation, that the argillite objects,

considered under all the conditions of their occurrence, are older as a class than those of jasper and quartz, which we know were fashioned by the Indians. It is not necessary, as has been done, to declare them, *if older*, to be simply the earlier workmanship of the Indian after his reaching the region. On the contrary, I claim this difference in age means a difference in origin, and that enough has been determined of the river valley as a whole, and of the eastward extension of the land to the sea, to assert with confidence that the argillite man was not a potter, or, if the invading Lenâpè shared the country with the conquered Allegewi, then he might have made crude attempts at shaping and baking clay during the period between the date of the subjection until their disappearance as a separate people.

Herein we have a sequence of event. We refer to a time prior to the Lenni Lenâpè in the Delaware valley, and subsequently to a time when Arctic conditions prevailed and man, indistinguishable from *Homo palæolithicus*, of Europe, was here; to a time when the man of the argillite period was in undisturbed possession of the land, and then to the passing, at last, of America's native races from the Atlantic seaboard and the fateful coming of the European. But how futile to estimate all this in years! The Lenni Lenâpè halted many a year before resuming their eastward journey, but who shall say how long entrenched in their thresholds were the Allegewi? To deal in numbers, to speculate on the lapse of years, is to vitiate archæological research. Of itself, whether one thousand years or five thousand, means nothing. It is an unfortunate tendency that should be checked.

The same is true of what we know collectively of natural phenomena, especially the dawn and passing of geological epochs. We are not contented with what we do know and are equal to ascertaining, but waste our strength in endeav-

oring to acquire knowledge of the unknowable. That the last ice epoch was a well defined condition there can be no doubt, but it is hopeless to attempt to determine its duration, and so, too, I maintain, of the period of its decline and final disappearance. Dr. Winchell believes otherwise in regard to the latter. He states :

"1. During the prevalence of the last ice-epoch the state of Minnesota was covered with ice, and all previous inhabitants, whether fauna or flora, were driven southward to more congenial climes.

"2. This condition ended between seven and eight thousand years ago. It is not necessary here to rehearse the investigations on which that result is based."

Why between seven and eight instead of eight or nine or nine or ten? Is it not guesswork at the best, and hazardous guessing at that? Whatever may be true of the interior of the country, it took a great deal longer than seven or eight thousand years to accomplish all that has taken place in the valley of the Delaware since man first stood upon the banks of this ancient river. Much, it is true, can happen in a thousand years; much did happen even among savage people in that length of time, but a thousand years in geology is about equal to a day in human affairs. Radical changes even among the most advanced people of to-day are not sudden. The spectacular outbreaks of freaks and fools do not sweep whole communities off their feet, and surely change was much more deliberate in the condition of primitive and nearly primitive man. The ice that drove the people of Minnesota, and of New Jersey as well, southward, was a long time in accumulating, and when, as a continental ice-sheet, it was a thing of the past, for how long were the glaciers that filled the immediate river valley? I know nothing of the conditions in Minnesota, but there was such a glacier here, filling the Delaware gorge from the Blue

Mountains to lower hills, many miles below. What constitutes the ending of such a condition as the glacial epoch? Have we not traces of it still, when every winter the river is filled with ice, and it has happened that so much gathers that spring is well advanced towards summer before the last of it has disappeared. Evidently all this change of a geological character was very gradual. We have not a vestige of evidence that warrants estimation of lapse of time in years. When it is admitted that certain events occurred between seven and eight thousand year ago, we use numbers rashly and convey no warranted impression. Time was, time is and time forever will be. This we have reason for believing. Time is not something instituted, and so it can be said there was a time when there was no time. It is but a convenient term for our own everyday affairs and to mark an epoch in our own career. Nature knows nothing of it. It is wholly out of place when dealing with geology. It cribs, cabins and confines the work both of geologist and archæologist. It belittles the grandeur of research. That which the student desires to know is the actual sequence of event. This informs. This makes plain the record of the past. Given this and the world and its inhabitants become intelligible. Bring in the arbitrary element of time, and the array of facts becomes little more than a heap of rubbish.

CONCLUSION.

Dr. Ales Hrdlicka in a recent bulletin (No. 33) of the Bureau of Ethnology, clears the way for that institution to discover, determine and set at rest for all time the question of the antiquity of Man in North America. The doctor is particularly savage when he growls at the valley of the Delaware, but the river still continues its upruffled flow, and at least one dweller on its banks pursues the even tenor of his way.

If we accept the conclusions as set forth in this bulletin, notwithstanding all the efforts that have been made since the establishment of the American Antiquarian Society at Worcester, Mass., early in the last century; the Smithsonian Institute at Washington, D. C., and the Peabody Museum at Cambridge, more than forty years ago, no advance has been made in throwing light on man's origin and early career on this continent. Always an army of workers in the field, and an army of observers quick to preserve the chance discoveries that may have an archæological significance; a whole library of supposed archæological literature, and yet nothing accomplished, and to-day we stand, according to Dr. Hrdlicka, as ignorant of early American man as did our forefathers of Jamestown, Plymouth Rock and the landing of William Penn. Not encouraging, surely, but really not discouraging. If the problem has been solved, there is that much less for the bureau to do. That it and other institutions have not done what they should in the all-important line of tracing man's origin on this continent is evident. The results, however abundant and convincing, would not satisfactorily fill a museum case and excite the wonderment of the gaping crowd. It is not a question of research, but search for prettiness. Pipes and pottery from the mounds, but the simpler handiwork of the mound-builders forebears is ignored. Much archæological research appears to have been on the principle that the aboriginies of this country had no ancestors, and yet no Indian ever talked long without referring to his "grandfather," using that term not literally but in a derivative or ancestral sense. It is well enough to be conservative, but conservatism can go too far and make that appear false which is really true. This is strictly so with reference to Dr. Hrdlicka's work as set forth in Bulletin 33 of the Bureau of Ethnology. Nothing that he adversely criticises may be as old as was at first

claimed, but, on the other hand, nothing is so recent as he would make it. The eagle may not be above the clouds but still far above the mountain's top. This means something in the matter of altitude. The "finds" of recent date may not carry us back to pre-glacial time. America's early man may never have witnessed a pliocene sunrise, but this does not bring all stone implements and fragmentary crania to so recent a date as to make them mere objects of ethnological interest.

Dr. Hrdlicka takes the ground firmly that wherever in North America sufficient portions of the human skeleton have been unearthed under conditions suggestive of antiquity to warrant comparison with like parts of a modern Indian, the result has been to bear witness against what may properly be called "geological" antiquity. Without discussing the merits of the value of such comparisons, what of such osseous fragments as are not sufficient for comparison and yet are unmistakably human. It certainly is more than probable that no complete skeleton could escape destruction when exposed to the vicissitudes of even the closing activities of a glacial period. Tossed about by floods; buried in gravel and unburied only to be re-buried, even a single bone could scarcely escape the destruction of its characteristics, and yet even so fragile an object as a *unio* shell—a single valve—has been found in coarse gravel so far from the surface that it surely was no intrusive object. Would Dr. Hrdlicka presume to declare it was specifically identical with the living mussels found in the nearest creek? If a *unio* is found and in the same horizon a fragment of a human cranium, which was the case, then why not the latter as old as the former? Surely an argument or inference applicable to the one should be equally applicable to the other.

The conclusion reached by the author quoted is that thus far on this continent no human bones of undisputed

"geological" antiquity are known; which simply means that he does not accept the fragments that have been found under what we may call geological conditions, or that the glacial activities of milleniums ago were too recent to be considered geological. It follows, therefore, that the proofs offered are not sufficiently weighty to convince him and there it rests, but until he or others explain away these fragments of bones and explain, too, far more logically than has been done, at least one cranium¹ from the Trenton gravels, the antiquity of man in North America is still an open question.

Dr. Hrdlicka accepts the antiquity of man in the world. He is not opposed to the view that this early man dates as far back as the tertiary period, which is going back two or three hundred thousand years ago, so it is estimated. This is like going out into the fresh air after confinement in a stuffy room. We have space in which to think. Vision is clearer. Earth takes on a new aspect. All that we know leads to the conclusion that the New World was peopled from the old, but to what extent "great multiplication and wide distribution of the human species and the development of culture," was necessary before this could take place, we do not know. When the world was sparsely settled and man was free to wander, meeting no other foes than wild beasts, it was more a matter of physical endurance than all else, how far he ultimately found himself from the home of his fathers. If the North American continent was unoccupied, can we not imagine the Eskimo wandering far south of the St. Lawrence?

"A wide dispersion of the race over the earth could hardly have taken place before the later stages of the Cenozoic era (the glacial period)." Why not earlier? The geological conditions just anterior to the ice age appear to have been in every way desirable, so far as average man

¹Archæologia Nova Cæsarea, II., p. 12.

looks upon life's fundamental requirements, and as he now lives under the conditions of extreme cold and extreme heat, whatever the climatic conditions of pre-glacial time, if he is equal to them now, he was equal to them then.

Notwithstanding such a bad showing as it appears to be to Dr. Hrdlicka, he does not look upon the case as hopeless. He considers there is still abundant incentive to continued, careful and, of course, scientifically conducted exploration; all of which means that the explorations, to date, have not been careful or scientifically conducted. Not at all complimentary, nor is the intimation of slipshod procedure in the past deserved. So far as the Delaware valley is concerned, certainly Mr. Volk's labors have been exhaustive, painstaking, intelligent and strictly conscientious. From what I know of it—he is my informant—I am disposed to believe that he was sometimes too careful, and in several instances rejected as evidence what I would unhesitatingly have accepted, especially in the case of chipped stones, which I believe were artificially shaped, but of which he was doubtful and so discarded as of natural origin.¹ Nor can I accept the conclusion of others, that no statement

¹An amusing and yet irritating instance of mis-placed credit occurred at the meeting of the International Congress of "Americanists," in New York, in October, 1902. Following an exhibition of crania and chipped stones from the Trenton gravel, which Prof. Putnam desired should "speak for themselves," Prof. W J McGee remarked: "There is a strong theory in favor of the existence of the glacial man. Now, looking at those skulls which, by Prof. Putnam's persistent efforts have been recovered from the Trenton sands, we all are convinced of the proposition. The burden of proof now lies on the other side." So far, so good, but Prof. McGee erred in attributing to Prof. Putnam the credit of the "finds" exhibited. The work was that of Mr. Volk, who was not directed, influenced or instructed by any one. Whatever credit is due is due to Mr. Volk. For Prof. Putnam, who was present, to silently accept the laudation from Prof. McGee is about in line with the suppression of Mr. Volk's report on his, to that time, thirteen years of labor in the field.

except that of an "expert" is to be accepted as to the actual conditions under which objects have been asserted to have been found. The practical knowledge of a contractor whose business it is to excavate for cellars, sewers and other work necessitating removal of large quantities of sand, gravel and clay, is of real value and should be given the consideration which it deserves. Hypercriticism of testimony not "expert" only retards progress and is not inexorably demanded by science. It must be remembered, too, that there is never unanimity among geologists when glacial and pre-glacial deposits of gravel are examined. Such, at least, has been my experience.

That evidence of early man in America would be welcomed by the scientific world is unquestioned, and Dr. Hrdlicka inclines to the view that the interior of the continent is more likely to produce it than anywhere along the eastern or western seaboard, but why the Missouri or Mississippi drainage areas are the more likely to reward the explorer than are the coastal plains is not apparent.

While great migratory movements have followed the courses of a continent's principal rivers, and this naturally, in that an open country is more easily travelled than a forest or a waterless desert, it is to be borne in mind that all the attractions of a river valley are manifold greater along the ocean. The ever uppermost question of food supply must not be lost sight of, and surely the ocean offers greater facilities for obtaining it than does any river. We do not associate navigation even in its rudest form with primitive man, but if the ancient river-side dweller had his boats, we must consider that the Eskimo had his, and we do not know when he invented his kayak. The probabilities all seem to point in the direction of early man, in his initial migrations, keeping within sight of the coast and gradually venturing into the interior, then a trackless forest teeming with

danger really, and to his impressionable mind would be a fearsome thing to face, except when many by a concerted movement, sought little by little to explore the streams that flowed to the sea.

Again, we do not, save in the most general way, know the condition of our Atlantic seaboard in pre-glacial time. We do not know how much land has been lost since man first stood upon the shore, with all America at his back, and nothing but the ocean and an unsuspected continent before him.

The main difficulty that now confronts the American archæologist is that he is several thousand years too late in making his investigations. Could he have seen the dry land of pre-glacial days, or even when this modest Delaware river, that has now lost every vestige of its former grandeur, was again ice-free in summer, after a glacial siege, the outlook would be suggestive beyond anything at present. The traces of early man would doubtless have proved as abundant as they now are rare.

Dr. Hrdlicka may be right. There may still be reason for continuing our labors in the field, but so insignificant is the reward of years spent with pick and shovel that often we are moved to throw down our tools and cry, too late!

And what a reception does anything savoring of a discovery receive!

My own conclusions, based wholly upon the results of my own explorations, are:

1. That man reached the North American continent in pre-glacial time. How far anterior to the ice age is immaterial and probably undeterminable.

2. That the epoch of ice and continued cold drove him southward, where he became established, flourished and became racially differentiated from his European or Asiatic ancestry.

3. That synchronous with the retirement towards the Arctic circle of arctic or glacial conditions the northern portion of the continent was re-peopled.

4. That the valley of the Delaware has yielded sufficient evidence to warrant the conclusion that it was occupied by man representing three distinct stages of culture:

- a. Palæolithic man.
- b. Argillite man.
- c. The historic Indian.

INDEX.

A.

	PAGE.
Activity, human, beginnings of, III.,	13
Africa, II., 3, 7; III.,	19, 42
Aleutian Islands, III.,	17
Algonkin crania, III.,	47
Algonquin, II.,	5, 33, 35
Allegewi, possible identity of, III.,	70
" unknown origin of, III.,	70
Alleghany Mountains, III.,	70
Alleghanies, II.,	7
America, ancient man of, II., 78; III.,	38
" Central, its relation to continental, II.,	3
" " ruined cities of, III.,	28
" man's origin in, II.,	4, 8
" native race of, II.,	19
" peopling of, II.; III.,	19
" North, II., 3, 8, 32; III.,	10, 18, 27
" " antiquity of man in, III.,	76
" South, its relation to continental, peopling of, II.; II., 3; III.,	17
American Antiquarian Society, III.,	77
" continent, man's first appearance on,	15
" man, Asiatic origin of,	19
" Museum of Nat. Hist., bulletin of, quoted, II.,	14
" Naturalist, periodical, quoted, 9; II.,	11
" savage, III.,	65
Anglesea, N. J., III.,	50
Antilles, II.,	3
Arctic regions, stone implements of,	40
Argillite arrowpoints (in N. J.), 42; II.,	29
" " decomposition of,	36
" " when used exclusively,	46
" artifacts, 29; III.,	54
" boulder, III.,	40
" man, 59; III.,	43, 47, 65, 83
" outcrop,	35

	PAGE
Arrow-points, 29, 36; II.,	19, 25
" " incrustations on,	37
Artifact, argillite,	29
" palæolithic,	20, 24, 30
Artifacts,	15
" stone,	15
Asia, II.,	3, 7
Assunpink Creek, N. J., II.,	14
Atlantic Coast, II.,	74
" County, N. J., palæolithic implements found in, 24; II.,...	50
" seaboard of U. S. early man along, 39; III.,	11, 48
Atotarho, II.,	33
Australia, marsupials of, III.,	42

B.

Balch, Edwin Swift, quoted, III.,	26
Bear, black, III.,	27
Bear, polar, III.,	27
Beatty, Charles, Rev., quoted, II.,	56
Beauchamp, W. M., Rev., quoted, II.,	32
Beesley, Maurice, Dr., quoted, III.,	51
Behring's Straits, early migration at,	11
Blades, argillite, cache of, II.,	46
Boudinot, Elias, quoted, II.,	68
Brainerd, John, Rev., quoted, II.,	65
Brinton, D. G., quoted, 20, II., 54, 67; III.,	43
Bristol, Pennsylvania, argillite at, II., 28; III.,	40
Brooks, obliterated,	62
Brugas, II.,	33
Burlington County, N. J., ancient cranium from, II.,	15, 52
" Island, III.,	38
Bushman (African) art, III.,	26, 46

C.

California, Southern, archæology of, II.,	20
Camel, III.,	26
Canassatego, III.,	18
Cape May County, N. J., argillite implements at, II.,	45
" " " " palæolithic implements at,	24, 37
Carr, Lucien, quoted, II.,	68
Catawba, N. J., arrow-heads at, II.,	50
Catlinite, occurrence as Indian relics, of, in N. J., 57; II.,	72
" " of, as evidence of commerce,	57

	PAGE
Cedar, red, III.,	50
Ceremonial objects, II.,	67
Chesapeake Bay, II.,	56
Chukches, spear-points of,	41
" stone implements of,	40
Coins, Colonial, III.,	20
Colonial furniture, III.,	73
Columbia gravel, 66; II., 12; III.,	63
" river, II.,	73
" sands, III.,	35
Columbus, Christopher, II., 3, 64; III.,	21
Contradictions, occurrence of, III.,	12
Cook, Geo. H., quoted, III.,	49
Cooper's Creek, N. J., III.,	66
Copper spears, II.,	34
Crania, human, value of comparison of, 50, III.,	47
Crosswicks Creek, Mercer County, N. J.,	61
Cushing, Frank H., quoted, II.,	66
Cusick, David, II.,	33

D.

Dall, W. H., Dr., quoted,	42
Dana, James D., quoted, III., p.	30
DeCosta, B. F., quoted,	43
Deer, III.,	27
Delaware bay, II.,	57
" Falls of the,	67
" Indians, II., 5, 24, 72; III.,	47
" " II., canoes of,	69
" " " idols of,	65
" " " relics of,	35
" " " spear-heads of,	33
" river, 6, 10, 26, 39; II., 43, 51, 63, 69, 72; III.,.....	22, 30, 37
" valley of the 3, 7, 19, 21, 24, 29; II., 4, 7, 9, 15, 20, 24, 29, 35, 43, 51, 63, 69, 72; III., 9, 14, 21, 30, 43, 47, 52, 66, 70, 75.	
" Water Gap, II.,	75
Drills, jasper, II.,	38
Dutch settlers, early, in N. J., II., 75; III.,	66

E.

Earth-works, Indian, III.,	19
Easter Island, III.,	54

	PAGE
Elephant, III.,	19
Erratics, III.,	40, 46
Eskimantic, III.,	44
Eskimo, III.,	27, 43, 71, 79
" Art, III.,	26
" crania of,	33
" Greenland, life led by,	23
" in Massachusetts,	43
" unlike "Arctic" man in N. J.,	44
Esquimaux, once in N. J., 40; III.,	44
" stone implements of,	40
Ethnology, Bureau of, III.,	10, 28
Europe, II., 3, 5, 7; III.,	11

F.

Fish spears, argillite, II.,	37
Fishing Creek shoal, III.,	52
Five Mile beach, N. J., III.,	50
Freshets, effects of,	26
Fur Trader's house on Burlington Island, III.,	38

G.

Gaddis Run, Bucks Co., Pennsylvania, II.,	47
Geologist, State, Reports of,	30
Geologists, ludicrous caution of,	6, 18
Germany, II.,	15
Glacial epoch,	31
" man,	31, 43
" period, II., 30; III.,	6
Gravel, ice-transportation of,	26
Gravels, Trenton, 4, 17, 30, 35, 37; II., 26; III.,	39
" " remains of man in, 4; II.,	40
" " " " mastodon in,	31
Great Egg Harbor river, N. J., II.,	50
" Ice Age, III.,	40

H.

Hatápi, II.,	35
Haynes, H. W., quoted, II.,	71, 77
Hæckwelder, II.,	37
Heckewelder, II., 5, 6; III.,	66
Holland, II.,	15

	PAGE
Holly, III.,	50
" Beach, III.,	50
Holmes, W. H., quoted, 18, 27, 30, 50, 57; II., 10, 29; III.,	22, 25
Homo palæolithicus, III.,	74
Hrdlicka Ales, quoted, 33; II., 14; III.,	64, 76
Hudson river, II.,	56

I.

Ilex opaca, III.,	50
Implements, agricultural, II.,	71
" caches of, II.,	40, 46
" chipped,	25
" condition of,	25
" gravel bed,	28
" stone,	15
" wooden, II.,	68
Indian, American, agricultural implements of, II., 71; III.,	72
" " antiquity of, 52; II.,	25
" " origin of, II.,	68
" " relation to Eskimo, III.,	17
" " wooden implements of, II.,	68
" Delaware, culture status of,	68
" historic, 7, 10, 33, 37, 39, 44, 51; II., 38, 50, 63; III.,	83
" " antiquity of, II.,	62
" burials, variation in, III.,	56, 59
" horizon,	11
" legends,	50
" ornaments, III.,	61
" pipes, III.,	57
" pottery, III.,	56
" Shawnee,	57
" shell-heaps,	59
" tools, II., 22; III.,	60
" village,	53
" village sites,	46
Indians, American, Handbook of, quoted, II.,	10, 25
" American, food of, III.,	21
" skeletons of, III.,	20
Indies, West,	11
Inter-tribal commerce,	57
Iroquois, II.,	5, 32, 35

J.

	PAGE
Japan, III.,	17
Jasper implements, 36; II.,	19
" pebbles, II.,	50
" quarries, II.,	50
Jesuit relations, II.,	5, 33
Juniperus Virginianus, III.,	50

K.

Kalm, Peter, quoted, 44; II.,	22
Kelvin, Lord, III.,	6
Keyport, N. J., shell-heaps at, 59; III.,	49
Knife, semi-lunar, III.,	47

L.

Lake Superior, copper mines at, II.,	73
Lenâpè stone, fraudulent, 51; II., 24; III.,	22
Lenni Lenâpè, 39; II., 11, 42, 58, 63, 74, 76; III.,	68, 74
Llama, III.,	26
Lockwood, Samuel, Rev., quoted, 31, 59; II., 66; III.,	49
Loderer, Account of North America, III.,	44
Long Branch, N. J., mastodon remains at,	31
Loskiel, II.,	37
Lower Black's Eddy, II.,	56, 60
Lubbock, Sir John (Lord Avebury), quoted,	41
Ludlam, Charles, quoted, III.,	51

M.

Maine,	41
Man, argillite,	40
" origin of, in America, II.,	4
" palæolithic, 23, 41; III.,	48
Maryland,	41
Massachusetts, coast of, Eskimo on,	43
Mastodon, 7, 30; II., 24; III.,	19
McGee, Prof. W J, quoted, III.,	54, 80
Mercer county, N. J., II.,	52
" H. C., quoted, 34; II.,	10, 43, 76
Mexico, III.,	28
Mey, Cornelius Jacobse, III.,	66

	PAGE
Minnesota, catlinite from, 57; II.,	72
" Aborigines of, III.,	67, 75
Minsi, II.,	74
Mississippi river,	73, 74
Monmouth County, N. J.,	31
Moose,	7, 32
Moravian missionaries, II.,	6
Morgan, Junius S.,	12
" Lewis H., quoted,	33
Mortuary Customs, III.,	54
Mountains, Blue, III.,	75
Musk ox, 7; III.,	27, 32, 34
Mussels, used for food,	60

N.

Nebraska, ancient man of,	49
New Jersey, 23; II.,	63, 72, 75
" " coastal plain of, III.,	47
" " mastodon remains in,	31
" " moose " " 	32
" " musk ox " " 	32
" " occurrence of seal in,	33
" " Pines of Southern,	35
" " reindeer remains in,	32
" " sea coast of, III.,	48
" " tide-water regions of,	38
" " walrus remains in,	32
New York, State of, II.,	32
Nockamixon, II.,	58
Nordenskiöld, A. E., quoted,	40
Norsemen,	36
North America, east coast of,	70
" Carolina, II.,	73

O.

Oak, aged, III.,	2
Obelisk, III.,	53
Ohio, mound-building in, II.,	72
Oregon, obsidian from,	57
Orient, history of, III.,	6
Osborne, H. F., quoted, 49; III.,	25

P.

Palæolithic horizon,	11
" " in Europe, II.,	48
" implements, 25, 29, 34; II., 82; III.,	34
" man, 23, 39, 40; II., 30; III.,	83
Panama, II.,	72
Peabody Museum, palæolithic implements at, 30, II.,	46
Pebbles, formation of, III.,	3
Peccary, III.,	26
Penn, William, II.,	71
Pennsylvania, II.,	63
Pepachkhamátunk, II.,	35
Periwig bar, III.,	33
Pleistocene Art, III.,	46
" Man, III.,	71
Point Pleasant, Bucks Co., Penna.,	35
" " " " " argillite quarry at, II.,	45
" " " " " pitted hammers at, II.,	48
Pottery, archæological significance of, II.,	41
" horizon of,	29
" manufacture of,	54
Pre-Indian,	II, 36, 39, 40
Princeton University, Museum of,	12
Proboscidea, fate of, III.,	20
Putnam, F. W., II., 10; III.,	80
Pyne, M. Taylor, 12; II., 16; III.,	14

Q.

Quarryman, ancient, II.,	43
Quartz implements, 36; II.,	19
Quercian ancestor of oaks, III.,	4

R.

Raccoon, N. J., II.,	22
Rancocas Creek, N. J., III.,	61
"Rejects," Indian,	22
Russell, Frank, Dr., quoted, II.,	11

S.

Saga, Eric Rothen, III.,	44
Sagenbibliothek, III.,	44
Sagas, quoted,	42

	PAGE
Sandy Hook, N. J., III.,	48
Seal, III.,	34
Schoolcraft, H. R., II.,	33
Seals, occurrence of in N. J.,	32
Shackamaxon, II., 72; III.,	29
Shawnee Indians,	57
" " pottery of,	57
Shell-heaps, Indian, antiquity of, 61, III.,	28
" " general character of, 60; III.,	49
"Sipitit,"	65
Skill, advance of,	65
" bearing on antiquity,	66
Skralingar, III.,	44
Skrællings,	43
Smith, Samuel, quoted, III.,	54
Smithsonian Institution, III.,	77
South Jersey, II.,	38, 46
" " sands of,	38
Spear, Indian, II.,	31
Sphinx, III.,	39
Stacy, Mahlon, quoted, II.,	24
Stone Age Industry, II.,	60
Susquehanna River, III.,	70
Swedes, early, in N. J., II.,	75
Swedesboro, N. J., II.,	22
Susquehanna River, II.,	57

T.

"Tachquahakan" (corn mill),	53
"Tangamican," II.,	35
"Tandanikan," II.,	35
Thoreau, H. D., quoted, II.,	19
Time, glacial,	11
" Miocene,	31
" post, 11; II.,	29
" pre-glacial,	11
" pre-Indian, II.,	28
Titeusquand, II.,	70
Toronto, Ontario, II.,	30
Tradition, Indian, value of, II.,	54
Trenton, N. J., 3, 29, 37, 67; II., 13, 25; III.,	30
" gravel, origin of, III.,	32, 40
" gravels, literature of,	8
" " traces of man in, 4, 17, 30; III.,	63
" " " " mastodon in,	13, 35, 37

	PAGE
"Turtle backs," II.,	60
Tuscaroras, traditions of, III.,	44

U.

Unami, II.,	74
Unalachtigo, II.,	74
Unionidæ (mussels),	60
United States, Atlantic seaboard of,	39
" " coast line of,	31
" " mid-continental regions of,	39
" " Pacific coast of,	39
Utah, obsidian from,	57

V.

Village, Indian, 53; II.,	69
" " burials at,	58
" sites, Indian,	46
" " absence of argillite at some,	46
Volk, Ernst, explorations of,9, 32, 33, 49, 56, 57, 58, 61, 64, 66; II., 11, 12; III.,	32, 80

W.

Walrus, 7, 32, 42; III.,	27, 34, 47
Walum Olam, 50, 51; II.,	54, 67
Wildwood, N. J., III.,	50
Winchell, N. H., quoted, III.,	67, 75
Wyomink, II.,	69

Z.

Zeisberger, II.,	33, 37
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